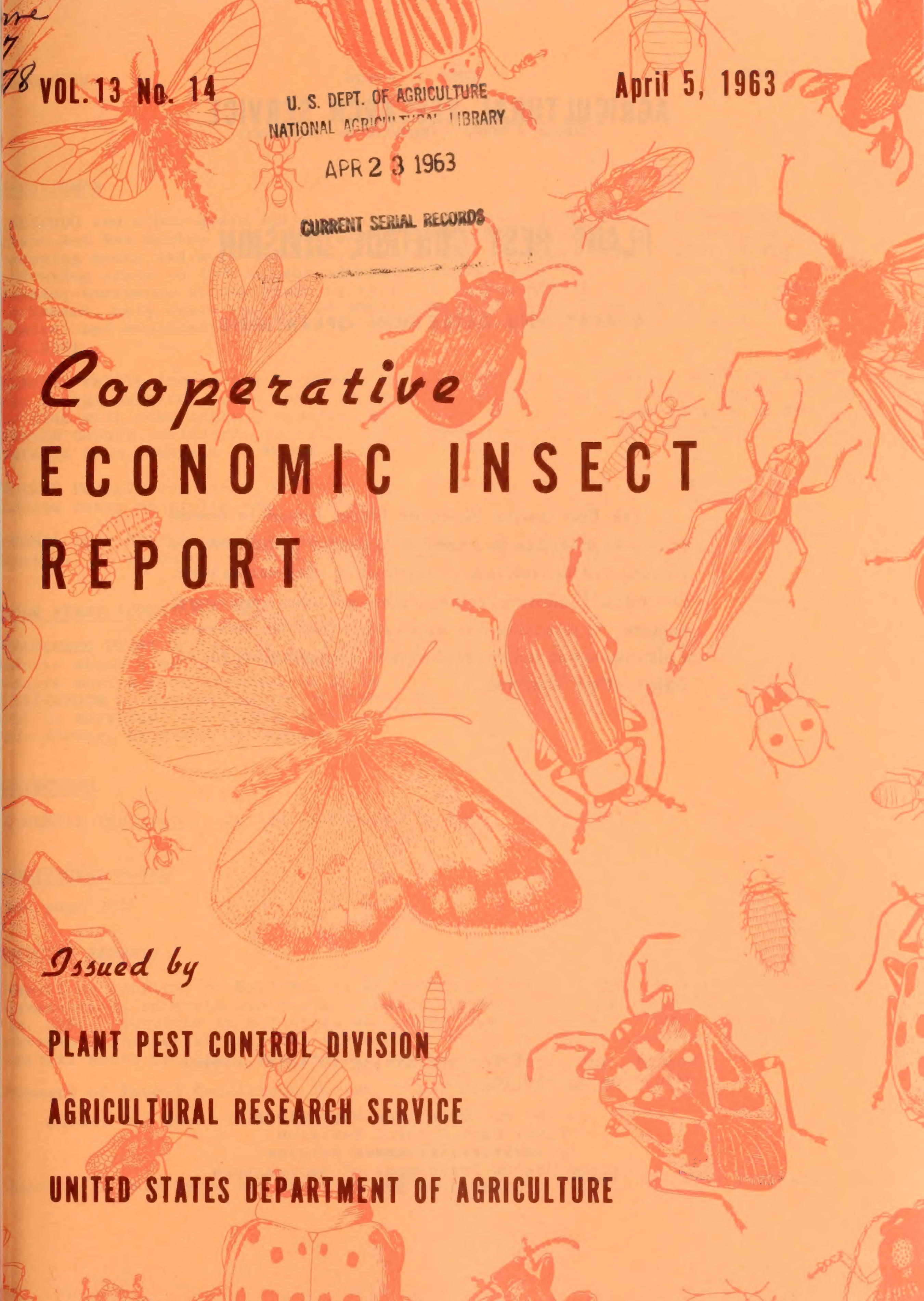
Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

VOL. 13 No. 14

April 5, 1963

U. S. DEPT. OF AGRICULTURE
NATIONAL AGRICULTURAL LIBRARY
APR 2 3 1963
CURRENT SERIAL RECORDS



Cooperative
ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

Reports and inquiries pertaining to this release should be mailed to:

Survey and Detection Operations
Plant Pest Control Division
Agricultural Research Service
United States Department of Agriculture
Washington 25, D. C.

Volume 13 April 5, 1963 Number 14

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

GREENBUG and other grain aphids continue generally noneconomic in Oklahoma, Texas and New Mexico. (pp. 315, 325). CHINCH BUG infestations in young milo becoming heavy and more widespread in Jim Wells County, Texas. HESSIAN FLY infesting trace to 100 percent of wheat plants in north central and central Kansas; emergence should begin by April 12 in southern portion of State. Also in Kansas, only trace numbers of WHEAT CURL MITE found in southwest, south central and southeast, and none found in north central and central areas. (p. 316).

ALFALFA WEEVIL increasing in number and distribution in Alabama, and populations and damage expected to be heavy in areas of Lincoln County, Nevada. Adults active in Utah with some control applied, and larvae found feeding on alfalfa in New Castle County, Delaware. (p. 316). PEA APHID generally light presently on alfalfa from Arkansas to Nevada. (pp. 316, 317, 325).

POTATO PSYLLID continues to increase in Arizona unless controls applied, and adults heavy on Lycium spp. in areas of Clark County, Nevada. (p. 318).

CEREAL LEAF BEETLE survival seems to be excellent in Michigan in spite of severe winter. No evidence of spring flight observed to March 29. (p. 325).

SOME FIRST APPEARANCE RECORDS

TARNISHED PLANT BUG adults in Delaware and Kansas; ELM LEAF BEETLE adults in debris about elms in Sutter County, California, and on elms in Arizona, and adults moving from hibernation in Oklahoma; CANKERWORMS in Wisconsin; SPRING CANKERWORM in Kansas; adults of HORNWORMS at Brownsville, Texas; female FACE FLY in Maryland; and CLOVER MITE in a number of States including Delaware, New Jersey, Utah and California.

DETECTION

A WEEVIL (Euclyptus rutilus) recorded for first time in Utah. (p. 324).

ADDITIONAL NOTES

See page 325.

SPECIAL REPORTS

Report on Survival of Boll Weevil as Determined by Spring Surface (Woods) Trash Examinations in North and South Carolina, Mississippi, Louisiana and Texas. (p. 319). Survival in all areas was lower than in spring of 1962. The most notable decreases were in the Piedmont of North and South Carolina, north central North Carolina, Mississippi and Louisiana.

Summary of Insect Conditions in the United States - 1962

Forest and Shade Tree Insects - (p. 327).

****

Reports in this issue are for week ending March 29, unless otherwise indicated.

WEATHER BUREAU 30-DAY OUTLOOK

APRIL 1963

The Weather Bureau's 30-day outlook for April calls for temperatures to average well below seasonal normals over the western half of the Nation, except for near normal along the west coast. In contrast, well above normal temperatures are anticipated to prevail over the eastern third of the country. In the remaining area, near normal averages are expected, but with large fluctuations from week to week. This temperature pattern is expected to favor more frequent storminess than usual, leading to precipitation in excess of normal over most of the Nation, except for near normal amounts along the Gulf and west coasts and subnormal amounts over the Far Southwest. From the Mississippi Valley eastward thunderstorm activity is expected to accompany many of the storms.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through Superintendent of Documents, Washington 25, D. C. Price $4.80 a year, $2.40 a half year.

WEATHER OF THE WEEK ENDING APRIL 1

Average temperatures, without exception, were near or above normal. Slightly below normal averages over much of the West Coast States kept the Nation as a whole from being unseasonably warm. However, daytime maxima in the mid-80's on 3 days contributed a large portion of the warmth necessary to boost averages to 20° above normal in the Dakotas. Many stations in the northern Great Plains had as many as 4 days when the mercury did not drop to freezing. As evidence of the changing seasons was the quite variable weather in most areas. On the 28th, an 83° high at Denver, Colorado, set a new early season record. Two stations in Michigan recorded 11° minima, and the mercury climbed from 33° to 90° at Roswell, New Mexico, on the same day. The only 100° reading reported during the period was from Presidio, Texas, on the 29th, when Grand Rapids, Michigan, had an 80° high. The generally warm weather in New England was responsible for substantially reducing the snow depths. A decrease of 20 inches or more in northern and central Maine brought maximum depths down to 2 feet.

Very little precipitation fell over the Southwest and the Great Plains except for northern Texas and Oklahoma. Almost daily precipitation over much of the Pacific Northwest led to totals up to 5 inches in the higher elevations and coastal locales. At elevations over 5,000 feet in northern California, this was the snowiest week of the season, while in Washington new snowfall increased depths by 20 to 40 inches. High winds accompanied a storm which moved from southern Oregon on the 27th into North Dakota by the 29th. Nearly all of the Far West had measurable precipitation amounts as this system passed; Los Angeles, California, received 1.13 inches on the 28th.

A cold front, moving from the Mississippi River Valley, touched off showers generally and thunderstorms locally on its eastward trek during the first 2 days. Hail dropped in Minnesota and Illinois on the 25th, to the size of golf balls at Perham, Minnesota. On the final 2 days, locally severe storms were touched off along a system situated from Pennsylvania and West Virginia, through Illinois and Iowa, into northern Texas. Paducah, Texas, was hit by hailstones to 2 inches in diameter, while drenched with 1.22 inches of rain in 22 minutes. Hail was reported to have piled to 3 inches deep near Springfield, Missouri.

Of special note was a report from Cincinnati, Ohio, on the 27th, which stated that the Ohio River was again within its banks after 22 consecutive days of being above flood stage, the longest such period of record. (Summary supplied by the U. S. Weather Bureau).

CEREAL AND FORAGE INSECTS

ARMY CUTWORM (*Chorizagrotis auxiliaris*) - KANSAS - Problem area continues to be about same as reported in CEIR 13(11):215, with low, noneconomic numbers found in wheat and alfalfa outside of area. Counts in northern area ranged from trace to 3 per foot of row; wheat in area in good condition and, in most instances, will not be severely damaged. Considerable wheat in southwestern area has been winter-killed and cutworm populations aided in keeping wheat from recovering. Wheat treated 2-3 weeks ago shows some recovery, but wheat being treated now appears to be past recovery; however, considerable spraying still being done. Majority of larvae examined ranged from fifth to seventh instar. Migration out of poor fields evidenced by dead larvae on roads. (Somsen, Peters). OKLAHOMA - Some control work continues in panhandle area; activity continues to decline elsewhere in northwest. Start of pupation observed in Grant and Alfalfa County areas. Some damage on alfalfa noted in Cherokee County area. (Okla. Coop. Sur.). TEXAS - Prevalence in mixed Bermuda grass-clover lawns in Caldwell County causing concern to homeowners. (Texas Coop. Rpt.; Massey).

CUTWORMS - COLORADO - Unspecified species found in trace numbers in alfalfa and wheat examined in Larimer and Weld Counties. Some reports of economic populations in few fields. (Jenkins).

EUROPEAN CORN BORER (*Ostrinia nubilalis*) - DELAWARE - No pupation noted in Sussex or New Castle Counties as of March 27. Spring borer population in Sussex County appears reduced from fall population by approximately 69 percent; a drop from average of 76 borers per 100 stalks in fall of 1962 to average of 24 per 100 stalks at present time. (Burbutis).

SOUTHWESTERN CORN BORER (*Zeadiatraea grandiosella*) - MISSOURI - Percent survival low in fields in southwestern area; six fields in 3 counties checked, with 5 live larvae found in 900 infested stalks. (Munson, Thomas, Wood).

NOCTUIDS - FLORIDA - *Heliothis zea* and *Spodoptera exigua* lightly infested corn at Iona, Lee County (March 20). (Fla. Coop. Sur.).

GREENBUG (*Schizaphis graminum*) - TEXAS - Populations were becoming heavy in few fields of oats and light to medium in fertilized wheat in Kaufman County; however, parasites and predators have reduced populations to noneconomic levels at present time. (Turney). OKLAHOMA - Continues at noneconomic levels throughout most of State. Some isolated control reported from Johnston County with counts up to 30 per linear foot in wheat. Spotted, moderate infestations continue in Bryan County but not sufficiently high to warrant controls. Counts of 3-15 per linear foot observed in southwest and 5-12 per linear foot in Muskogee area. (Okla. Coop. Sur.). ARKANSAS - Only an occasional specimen found in small grain in northwest. (Ark. Ins. Sur.).

CORN LEAF APHID (*Rhopalosiphum maidis*) - ARIZONA - Continues present on barley in many parts of central area; controls may be required in some fields. (Ariz. Coop. Sur.). NEVADA - Light on barley in Moapa Valley, Clark County. (Bechtel, Zoller).

APPLE GRAIN APHID (*Rhopalosiphum fitchii*) - OKLAHOMA - Only light counts observed in scattered portions of southwest and south central areas. (Okla. Coop. Sur.).

ENGLISH GRAIN APHID (*Macrosiphum avenae*) - OKLAHOMA - Generally light counts noted throughout State; highest counts per linear foot were 25-35 in Greer and 20 in Muskogee Counties. (Okla. Coop. Sur.). ARKANSAS - Only an occasional specimen found in small grain in northwest. (Ark. Ins. Sur.).

APHIDS - GEORGIA - Infestations of an unspecified species heavy on barley in Brooks County. (Carr). OREGON - Specimens collected from Merion bluegrass at Independence, Polk County, in December 1962 determined as *Rhopalosiphum padi* by W. R. Richards. (Larson).

CHINCH BUG (*Blissus leucopterus*) - TEXAS - Infestations on young milo becoming heavy and more widespread in Jim Wells County. (Texas Coop. Rpt.; Jones).

LEAFHOPPERS - OKLAHOMA - Unspecified species causing apparent damage to field of barley in Marshall County. High population also present in wheat in Bryan County. (Okla. Coop. Sur.).

FALSE WIREWORMS - KANSAS - Few larvae of undetermined species found in Finney County wheat. (Somsen, Peters).

HESSIAN FLY (*Phytophaga destructor*) - KANSAS - Counts of infested plants ranged from trace to 100 percent in north central and central areas. Only trace counts found in northern portions of south central and southwestern areas. Area of heaviest infestation continues same as in 1962. Emergence should begin within 2 weeks in southern portion of infested area. (Somsen, Peters).

WINTER GRAIN MITE (*Penthaleus major*) - OKLAHOMA - Light activity reported from Woods County (northwest). (Okla. Coop. Sur.). TEXAS - Only an occasional specimen found on small grains interplanted with vetch in Kaufman County. (Turney).

BROWN WHEAT MITE (*Petrobia latens*) - OKLAHOMA - Reported active in wheat in Ellis County (west central). (Okla. Coop. Sur.). COLORADO - Not found on wheat in Larimer County. (Jenkins).

WHEAT CURL MITE (*Aceria tulipae*) - KANSAS - Only trace numbers found in wheat in Clark (southwest), Sumner (south central) and Cowley (southeast) Counties. None found in north central or central areas of State. (Somsen, Peters).

ALFALFA WEEVIL (*Hypera postica*) - NEVADA - Early stage larvae heavy in Hiko area and light to heavy in Alamo area, Lincoln County. Populations and damage probably will be generally heavy in these areas again this season. (Bechtel, Munk, Zoller). UTAH - Adults active and marking new growth alfalfa in Cache and Weber Counties. Alfalfa growth at Logan, Cache County, 1-2 inches on west slopes. (Knowlton, March 25). Controls applied to 50 percent of acreage in Utah County by March 27. (Knowlton, Acord). Approximately 50 percent of alfalfa in Cache County treated as of March 26. (Knowlton, Tueller). Field checks in Logan vicinity indicate relatively high adult survival. (Knowlton). COLORADO - Adults have not been observed, although some feeding damage evident in some alfalfa in in Larimer County. (Jenkins). ALABAMA - Populations increasing in size and distribution; infestations found in Chambers, Lee, Madison, Limestone and Morgan Counties. (Buttram). DELAWARE - First larvae of season (first instars) feeding on alfalfa in New Castle County, March 26. Counts in one field were 235 eggs per 100 old alfalfa stems. Approximately 33 percent of these eggs appeared to be newly laid. (Burbutis).

CLOVER LEAF WEEVIL (*Hypera punctata*) - KANSAS - Occasional larvae noted in alfalfa in southern part of State. (Somsen, Peters). UTAH - Occasional adult observed in alfalfa in Bluffdale area, Salt Lake County. (Knowlton).

SPOTTED CUCUMBER BEETLE (*Diabrotica undecimpunctata howardi*) - OKLAHOMA - Light activity noted in alfalfa in Grady and Stephens Counties. Adults ranged up to 0.5 per sweep. (Okla. Coop. Sur.).

A BLACK FLEAHOPPER (*Spanogonicus albofasciatus*) - NEVADA - Adults present on alfalfa in very low numbers in Moapa Valley, Clark County. (Bechtel, Zoller).

PEA APHID (*Acyrthosiphon pisum*) - NEVADA - Infestations on alfalfa very light and spotted in Moapa Valley, Clark County. (Bechtel, Zoller). ARIZONA - Continues to appear on alfalfa. (Ariz. Coop. Sur.). TEXAS - Low numbers appearing in Kaufman County vetch; no controls needed at present time. Causing concern because appearance is earlier than normal. Very few beneficial insects present. (Turney). OKLAHOMA - Light to moderate in alfalfa throughout southern part of

State. Counts per 10 sweeps, by county, as follows: Pontotoc - 200-250; Harmon - 500-750; Grady - 100-150. Counts per square foot of crown area were 17-30 in Kiowa County and 25-75 in Stephens County. (Okla. Coop. Sur.). ARKANSAS - Numbers increased slightly in northwest; ranged 2-5 per square foot. (Ark. Ins. Sur.). MISSOURI - Light in southeastern area. Ranged 0-14 per sweep on clover and alfalfa; average 3.5. (Munson, Thomas, Wood). KANSAS - Counts in southern area alfalfa generally less than one per sweep, with one field in Cowley County (southeast) having 7 per sweep. Alfalfa making good growth; no problem expected. (Somsen, Peters).

SPOTTED ALFALFA APHID (Therioaphis maculata) - OKLAHOMA - Light in Stephens County; 30-60 per square foot of crown area. Only report or observation this period. (Okla. Coop. Sur.). KANSAS - None found in any alfalfa examined. (Somsen, Peters).

GREEN PEACH APHID (Myzus persicae) - ARIZONA - Present in alfalfa and safflower. (Ariz. Coop. Sur.).

TARNISHED PLANT BUG (Lygus lineolaris) - DELAWARE - First adults of season active in New Castle County alfalfa March 25. (R. Huber). KANSAS - Occasional adults noted in alfalfa in southern area. (Somsen, Peters). OKLAHOMA - Occasional specimens noted in alfalfa in Grady and Harmon Counties. (Okla. Coop. Sur.).

CLOVER LEAFHOPPER (Aceratagallia sanguinolenta) - UTAH - This species and Dikraneura carneola common on grassy roadsides and in grassy alfalfa fields in Smithfield-Lewiston area of Cache County. (Knowlton).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - ALABAMA - Building up in alfalfa in Clay and Lee Counties; ranged 1-8 per sweep. (Barwood). ARIZONA - Increasing on all alfalfa at lower elevations. (Ariz. Coop. Sur.).

A SPIDER MITE (Tetranychus sp.) - NEVADA - Heavy on alfalfa in Pahrump Valley, Nye County; treatments required in several fields. (Zoller).

FRUIT INSECTS

PLUM CURCULIO (Conotrachelus nenuphar) - GEORGIA - Adults appearing on peach trees in peach belt of central part of State, but temperature, especially at night, has been too low to bring them out in numbers. Average of 0.6 curculio per tree taken from outside row of peach trees, next to woodland, in one orchard on March 25. (Snapp).

PEACH TWIG BORER (Anarsia lineatella) - CALIFORNIA - Infestations heavy on peach trees in Beaumont area, Riverside County. (Cal. Coop. Rpt.).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - TEXAS - Activity on fruit trees continues in most areas of State as warm weather stimulates hatching and tree budding. (Texas Coop. Rpt.). OKLAHOMA - Activity observed throughout southeastern and central portions of State; webs appearing on fruit trees and wild plum. (Okla. Coop. Sur.).

A LYCAENID - TEXAS - Heavy, local larval populations feeding on wild plum fruits in Cameron County. (Texas Coop. Rpt.; Stephens).

WOOLLY APPLE APHID (Eriosoma lanigerum) - ALABAMA - Damage to young apples increasing in Clay and Coosa Counties. Several trees destroyed. (Buttram).

SAN JOSE SCALE (Aspidiotus perniciosus) - OKLAHOMA - Very light on peach trees in Stillwater area, Payne County. (Okla. Coop. Sur.).

A COCCID (Lecanium sp.) - MARYLAND - Light on peaches in orchard in Baltimore County. (U. Md., Ent. Dept.).

PECAN CARPENTERWORM (Cossula magnifica) - ALABAMA - Eight half-grown larvae taken from pecan trees in Mobile County. Populations appear heavier than usual. (Seibels, Buttram).

OBSCURE SCALE (Chrysomphalus obscurus) - ARKANSAS - Crawlers active on pecan in Carlisle area, Lonoke County (east central). (Ark. Ins. Sur.).

A LEAF ROLLER (Amorbia essigana) - CALIFORNIA - Heavy populations present on avocado trees in Riverside, Riverside County. (Cal. Coop. Rpt.).

DRIED FRUIT BEETLES (Carpophilus spp.) - CALIFORNIA - C. marginellus, C. lugubris and C. freemani collected from fruit of Citrus sinensis in Yuba City, Sutter County. Dried fruit beetles have been collected during winter months from citrus drops in several locations within State at various times. (Cal. Coop. Rpt.).

CALIFORNIA RED SCALE (Aonidiella aurantii) - CALIFORNIA - Medium on Meyer lemon tree nursery stock in Borrego, San Diego County. (Cal. Coop. Rpt.).

SIX-SPOTTED MITE (Eotetranychus sexmaculatus) - CALIFORNIA - Medium on lemon trees in Coronada, San Diego County. (Cal. Coop. Rpt.).

TRUCK CROP INSECTS

YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) - TEXAS - Widespread populations in Guadalupe County home gardens causing light to moderate damage to plants. (Texas Coop. Rpt.; Massey).

ARMY CUTWORM (Chorizagrotis auxiliaris) - TEXAS - Light, widespread populations causing some damage to garden plants in Caldwell, Guadalupe and Hays Counties. (Texas Coop. Rpt.; Massey). IDAHO - Larvae range 1-5 per linear foot in field of fall-seeded carrots in Arena Valley near Parma, Canyon County. (Waters).

GREEN PEACH APHID (Myzus persicae) - COLORADO - Numerous in potato storage; potatoes being held for conditioning to processing into potato chips in Weld County. (Simpson, Felton, Livingston). ARIZONA - Continues present on sugar beet seed. (Ariz. Coop. Sur.).

TEXAS LEAF-CUTTING ANT (Atta texana) - TEXAS - Heavy, local populations in Washington County damaging tender vegetables in home gardens. (Texas Coop. Rpt.; McClung).

CABBAGE LOOPER (Trichoplusia ni) - FLORIDA - This species and Pseudoplusia includens light on potato at Homestead, Dade County (March 21). (Fla. Coop. Sur.).

A CUTWORM - TEXAS - Spotted infestations of undetermined species on tomatoes in Cameron County requiring treatment in some instances. (Texas Coop. Rpt.; Day).

POTATO PSYLLID (Paratrioza cockerelli) - ARIZONA - Numbers continue to increase unless control measures are practiced. (Ariz. Coop. Sur.). NEVADA - Adults numerous on Lycium sp. in Overton, and adults and eggs heavy on Lycium spp. north of Moapa, Clark County. (Bechtel, Zoller).

CABBAGE APHID (Brevicoryne brassicae) - GEORGIA - Light on cabbage in Brooks and Colquitt Counties. (Johnson).

CABBAGE SEEDPOD WEEVIL (Ceutorhynchus assimilis) - OREGON - Adults appeared on wild mustard throughout northern Willamette Valley areas in mid-March. (Capizzi).

APHIDS - ARIZONA - Unspecified species continue a problem on lettuce in central area. (Ariz. Coop. Sur.).

THRIPS - ARIZONA - Unspecified species present on lettuce in many fields in central area. (Ariz. Coop. Sur.). NEW MEXICO - Light in onion fields near Las Cruces, Dona Ana County. (N. M. Coop. Rpt.).

BUCKTHORN APHID (*Aphis nasturtii*) - FLORIDA - Moderate on strawberry at Immokalee, Collier County. (Fla. Coop. Sur.).

TOBACCO INSECTS

TOBACCO FLEA BEETLE (*Epitrix hirtipennis*) - GEORGIA - Light on tobacco in plant bed in several southern counties. (Johnson).

VEGETABLE WEEVIL (*Listroderes costirostris obliquus*) - GEORGIA - Light on tobacco in plant bed in several southern counties. (Johnson).

COTTON INSECTS

Report on Survival of Boll Weevil as Determined by Spring Surface (Woods) Trash Examinations in North and South Carolina, Mississippi, Louisiana and Texas

Spring 1963 collections of surface ground (woods) trash samples (two square yards per sample) have been completed in five Southern States by cooperating agencies to determine the number of live boll weevil (*Anthonomus grandis*) adults that survived the winter. Wherever possible, samples were taken from the same locations that were sampled in the fall of 1962. See CEIR 12(50):1255-1256 and CEIR 13(1):4 for details concerning the fall hibernation survey in these five States.

In NORTH and SOUTH CAROLINA, samples were collected March 11-22 in the same four representative areas in which fall samples were collected. In each area, a total of 30 locations (farm sites) was sampled with three samples being taken at each location. The same locations were sampled in both the fall and spring examinations. The areas are as follows: Area 1 - south central South Carolina (Orangeburg, Dorchester and Bamberg Counties); Area 2 - Coastal Plains of South and North Carolina (Florence, Darlington and Marlboro Counties, S. C., and Scotland County, N. C.); Area 3 - Piedmont of South and North Carolina (Anderson, Greenville and Spartanburg Counties, S. C., and Mecklenburg, Cleveland and Union Counties, N. C.); and Area 4 - north central North Carolina (Nash, Wilson, Franklin and Edgecombe Counties). The average number of live weevils found per acre in Areas 1, 2, 3 and 4 was 914, 1,560, 350 and 161, respectively. The percent survival for these areas was 21.5, 12.8, 4.1 and 3.1, respectively. The survival was lowest in Areas 3 and 4 and highest in Areas 1 and 2. The 1963 average survival figures of 914 and 1,560 weevils per acre in Areas 1 and 2 are approximately 50 percent of the 1962 survival figures of 1,667 and 3,654 weevils per acre. The survival figure of 350 is approximately 12 percent of the 1962 spring average of 2,823 weevils per acre in Area 3. The survival figure of 161 weevils per acre in Area 4 is approximately 17 percent of the 1962 spring average of 968 weevils per acre. In Florence County, South Carolina, fall and spring examinations have been made since 1938. An average of 807 weevils per acre was found for the spring of 1963, with a winter survival of 5.7 percent. The number of weevils surviving in this county is the lowest since the spring of 1961.

Collections were started February 25 in MISSISSIPPI and completed on March 15. Three samples were taken from each location and either seven or eight locations were sampled in each county. Wherever possible the samples were taken from the locations that were sampled during the fall of 1962. Four counties made up each area and the State was divided into four areas as follows: Area 1- lower delta (Sharkey, Issaquena, Yazoo, Humphreys Counties); Area 2 - central delta (Washington, Bolivar, Sunflower, Leflore Counties); Area 3 - north delta (Coahoma, Tunica, Quitman, Panola Counties); and Area 4 - hill section (Holmes, Madison, Noxubee, Monroe Counties). Ninety samples were taken from a total of

30 locations in each of the four areas, giving a total of 360 samples taken from the State. Boll weevils were found in Area 3 only; where the average number per acre was 51. This gave a State average of 13 compared with 1,132 in 1962, 1,246 in 1961, 821 in 1960, 464 in 1959 and 392 in the spring of 1958. The percent survival for Area 3 was 0.4. The State average percent survival was 0.2 compared with 13.59 in 1962, 8.59 in 1961, 16.23 in 1960, 12.22 in 1959 and 6.65 in 1958. The number of boll weevils found in the respective areas in the fall of 1962 was 2,863, 5,377, 13,761 and 2,850.

In northeast LOUISIANA, collections were made from February 27 to March 14. The area was comprised of East Carroll, Madison and Tensas Parishes. The number of boll weevils found per acre was zero in East Carroll Parish, 363 in Madison Parish and zero in Tensas Parish. The average for the tri-parish area this spring was 121 compared with 2,233 last spring, and the winter survival 3.0 percent. A total of 4,035 weevils per acre were found in the fall of 1962 in this area. In Madison Parish, where similar records have been made for the past 27 years, the survival for the winter of 1962-63 was 10 percent as compared with the average of 38 percent for the past 27 years. During the 27-year period that these records have been made, the winter survival has been lower in only two winters than that for the winter of 1962-63. In the winter of 1936-37, the survival was two percent and, in 1939-40, it was eight percent.

In Falls, Hill, Limestone and McLennan Counties, TEXAS, spring collections were made March 12-21. Collections were made from the same locations from which samples were collected last December 1962. Three samples were taken from each location and either six or seven locations were sampled in each county. Seventy-five samples were taken from a total of 25 locations in the four counties. The average number of weevils found per acre in Falls, Hill, Limestone and McLennan Counties in the spring was 134, 0, 1478 and 230, respectively, with an average of 452. There were 2,285, 1,613, 1,882 and 1,380 weevils per acre in these same four counties, in the fall of 1962, with an average of 1,781 for the area. The survival percentage of 25.4. This compares with survivals of 31.14, 33.7 and 33.1 in March of 1960, 1961 and 1962, respectively. Fewer weevils were found in the fall inspections in 1962 than the previous three years. The indicated spring survival was considerably lower than in previous years in Falls, Hill and McLennan Counties, while in Limestone County, it was much higher. The area average number per acre was lower than in the spring of 1960, 1961 and 1962. Counts in 1962 averaged 1,361 for the area.

PINK BOLLWORM (Pectinophora gossypiella) - FLORIDA - Infesting hibiscus at Plantation Key, Monroe County (March 18). Det. by W. Breidenbach. (Fla. Coop. Sur.).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

PINE BARK APHID (Pineus strobi) - MARYLAND - Several moderate to heavy infestations occurring on white pines in Prince Georges County. (U. Md., Ent. Dept.).

A FIR APHID (Cinara curvipes) - CALIFORNIA - Heavy concentrations present on Deodar cedar in San Mateo County. (Cal. Coop. Rpt.).

SPOTTED PINE SAWYER (Monochamus maculosus) - COLORADO - Found on pine in Boulder County. (Hantsbarger).

ELM LEAF BEETLE (Galerucella xanthomelaena) - OKLAHOMA - Adults moving from hibernation as warm weather persists. (Okla. Coop. Sur.). ARIZONA - Adults appearing on elms in Salt River Valley; controls will be needed very shortly. (Ariz. Coop. Sur.). CALIFORNIA - Adults heavy in debris around trunks and in grass about elms in Pleasant Grove, Sutter County. (Cal. Coop. Rpt.).

EASTERN TENT CATERPILLAR (*Malacosoma americanum*) - ARKANSAS - Observations and reports indicate this pest may be more numerous than in past. Nests 3-5 inches in diameter present in Fayetteville area, Washington County. Unusually widespread nests reported in Hot Springs, Garland County (southwest). Present on wild cherry in Forrest City area, St. Francis County (east central). *Prunus japonica* one of principal hosts in local area. (Ark. Ins. Sur.). ALABAMA - Several tents observed on wild cherry in Lee, Tallapoosa and Clay Counties. First report of season. (Barwood).

FOREST TENT CATERPILLAR (*Malacosoma disstria*) - TEXAS - This species and *Malacosoma* sp., probably *texanum*, heavy on live oak trees in Travis County; up to 20 colonies present on trees approximately 10-20 feet tall. Species intermingle freely and feed together in same colony. Large collection of larvae being reared to obtain positive determination of latter species. (Newton). Populations in Caldwell and Guadalupe Counties apparently lower but are widespread over area. (Texas Coop. Rpt.; Massey).

GREAT BASIN TENT CATERPILLAR (*Malacosoma fragile*) - NEVADA - Small tents appearing on *Populus* spp. in Moapa Valley and on *Prunus fasciculata* in the Spring Mountains in Clark County. (Bechtel, Zoller).

TENT CATERPILLARS (*Malacosoma* spp.) - ARIZONA - Increasing on cottonwoods in Salt River Valley. (Ariz. Coop. Sur.).

A SESIID MOTH (*Paranthrene* sp.) - ARKANSAS - Larvae, possibly *P. dollii*, present on cottonwood in Hempstead County (southwest). (Ark. Ins. Sur.).

CANKERWORMS - WISCONSIN - First male moths of season taken in blacklight traps. (Wis. Ins. Sur.).

A GALL WASP (*Callirhytis punctata*) - NORTH CAROLINA - Present on oaks at a location in Sampson County. (Wray).

APHIDS - OKLAHOMA - Heavy populations of *Macrosiphum* sp. causing honeydew on gladiolas and petunias in greenhouse in Marshall County (south central). (Okla. Coop. Sur.). ARIZONA - *Myzus persicae*, *Aphis nerii* and *Rhopalosiphum maidis* appearing on roses and many annuals in yards in central area. (Ariz. Coop. Sur.). CALIFORNIA - *Myzocallis arundinariae* medium on *Phyllostachys bambusioides* (bamboo) in Sacramento, Sacramento County. (Cal. Coop. Rpt.).

EUONYMUS SCALE (*Unaspis euonymi*) - MARYLAND - Heavy on euonymus at Bethesda, Montgomery County. (U. Md., Ent. Dept.). FLORIDA - Severe on *Euonymus* sp. at De Land, Volusia County (March 20). (Fla. Coop. Sur.). ARKANSAS - Crawlers active on euonymus in Little Rock area, Pulaski County. (Ark. Ins. Sur.).

OYSTERSHELL SCALE (*Lepidosaphes ulmi*) - COLORADO - Eggs white; no sign of development on lilac shrubs in Larimer County. (Jenkins). UTAH - Very numerous on lilacs and willow trees at Brigham City, Ogden and Farmington in northern part of State. (Knowlton).

WAX SCALES (*Ceroplastes* spp.) - NORTH CAROLINA - Infesting camellia, jasmine and nandina in Wake County. (C. F. Smith).

Coccids in Florida - *Pseudaonidia clavigera* collected on *Camellia* sp. and *Ligustrum* sp. at St. Petersburg, Pinellas County (March 20); no live scale found. *Diaspis boisduvalii* moderate on 100 *Archontophoenix alexandrae* at Largo, Pinellas County (March 21). *Fiorinia theae* severe on *Camellia japonica* at Orlando, Orange County (March 19). *Lepidosaphes gloverii* ranged light to moderate on *Citrus sinensis* at Holly Hill, Volusia County (March 13). *Lepidosaphes madkelli* was moderate on *Juniperus* sp. at Orlando (March 20). *Parlatoria pergandii* ranged light to moderate on *Citrus sinensis* at Holly Hill (March 13), and was light on *Viburnum* sp. at De Land, Volusia County (March 20). *Phenacaspis cockerelli* was light to moderate on *Strelitzia reginae* at Ormond Beach, Volusia County

(March 18). *Pinnaspis strachani* lightly infested 100 *Hibiscus* sp. at New Smyrna Beach, Volusia County (March 21). *Protopulvinaria pyriformis* was light to moderate on *Gardenia* sp. at Holly Hill (March 13). *Pseudaulacaspis major* was moderate on *Koelreuteria* sp. at Laurel, Sarasota County (March 1). *Saissetia hemisphaerica* was severe on fern at Ormond Beach (March 18). *Saissetia oleae* ranged light to moderate on *Citrus sinensis* at Holly Hill (March 13). (Fla. Coop. Sur.).

A FALSE KATYDID - TEXAS - Eggs collected from ornamental plants in widely separated counties of Gray and Hill. Eggs from Hill County heavily parasitized by an undetermined hymenopteron. (Hoerman, Whaley).

INSECTS AFFECTING MAN AND ANIMALS

COMMON CATTLE GRUB (*Hypoderma lineatum*) - OKLAHOMA - Adults active and annoying animals in Stillwater area of Payne County (north central), Comanche County (south central) and in Pushmataha, Choctaw and McCurtain Counties (southeast). (Okla. Coop. Sur.).

HORN FLY (*Haematobia irritans*) - OKLAHOMA - Small numbers present on animals in north central and southeastern sections of State. (Okla. Coop. Sur.).

FACE FLY (*Musca autumnalis*) - MARYLAND - Female found in dairy herd at Beltsville, Prince Georges County, March 28. First fly found in 1962 at this location was on April 25. (J. H. Fales).

BLACK BLOW FLY (*Phormia regina*) - OKLAHOMA - Activity noted in Osage and Johnston Counties. (Okla. Coop. Sur.). UTAH - This species and smaller flies annoying cattle in feedlot at Cove, Cache County. (Knowlton, Mar. 26).

MOSQUITOES - MARYLAND - Larvae of *Aedes sticticus* and *A. stimulans* collected March 25 in Dorchester County. (U. Md., Ent. Dept.). FLORIDA - *Culex salinarius*, *Anopheles crucians* and *Mansonia perturbans* collected at light in Gainesville, Alachua County, March 26. (Fla. Coop. Sur.). UTAH - Larvae present in several counties from Brigham City to south of Provo along the Wasatch Front. *Aedes dorsalis* larvae present in Weber County; 12 acres treated March 26. *Aedes increpitus* larvae averaged 7 per dip; noted in river bottoms west of Ogden. Occasional *Culex* spp. larvae found in Weber County. (Fronk, Knowlton).

LONG-NOSED CATTLE LOUSE (*Linognathus vituli*) - GEORGIA - Light to heavy on cattle in Spalding County. (Roberts, March 18). OKLAHOMA - Populations declining on cattle in Payne County area. Counts of 5 per hair part still present on steers in Garvin County (south central). (Okla. Coop. Sur.).

CATTLE LICE - UTAH - Approximately 5,000 head treated during past month in eastern Millard County. (Knowlton, Richenbach, March 25). Some cattle in Cache and Weber Counties treated; others rubbing and should be treated. Some conspicuously infested cattle observed at Pleasant Grove, Utah County. (Knowlton, March 25). NEW MEXICO - Light to medium on cattle in Melrose, Curry County. Rubbing treatment appears to be satisfactory. (N. M. Coop. Rpt.).

LONE STAR TICK (*Amblyomma americanum*) - OKLAHOMA - Moderate to heavy on cattle in southeast. Also noted as heavy on deer in McAlester area, Pittsburg County, and on coyotes in Johnston County area. Extensive dipping and spraying of cattle reported in southeastern area. (Okla. Coop. Sur.).

AN ITCH MITE (*Sarcoptes* sp.) - CALIFORNIA - Heavy infestations developing locally on horses and mules in Florin, Sacramento County. (Cal. Coop. Rpt.).

A BLOODSUCKING MITE (*Haemolaelaps geomys*) - CALIFORNIA - Heavy on gophers in Sacramento, Sacramento County. (Cal. Coop. Rpt.).

A BROWN SPIDER (*Loxosceles reclusa*) - OKLAHOMA - Activity causing some concern to several homeowners in Stillwater area, Payne County (north central). (Okla. Coop. Sur.).

HOUSEHOLD AND STRUCTURAL INSECTS

CLOVER MITE (*Bryobia praetiosa*) - CALIFORNIA - Migration into homes began in several locations in State. Residents annoyed in Angeles Camp, Calaveras County. (Cal. Coop. Rpt.). UTAH - Caused numerous complaints of entering homes in Salt Lake, Davis, Weber and Box Elder Counties. (Knowlton). FLORIDA - Crawling on walls in residence at Pensacola, Escambia County. (Boyd, Mar. 22). NORTH CAROLINA - Troublesome around home in Burke County. (Parton). VIRGINIA - Common in homes in several parts of State during early March. (Tarpley et al.). MARYLAND - Abundant and caused nuisance in Silver Spring home, Montgomery County. (U. Md., Ent. Dept.). DELAWARE - First occurrence of season reported on outside of New Castle County home. (W. Connell). NEW JERSEY - Several infestations reported. (Ins.-Dis. Newsltr., Mar. 26).

BOXELDER BUG (*Leptocoris trivittatus*) - MICHIGAN - Overwintering forms active in warm locations of infested houses near Lansing, Ingham County. (Dowdy, March 25). Reported active around households as far north as Bay County. (Dowdy). UTAH - Annoyance has been common in many Salt Lake County communities during warm periods of February and March. (Knowlton, Rose). OREGON - Reported active and of concern around residences in the Willamette Valley during March. (Capizzi).

CARPET BEETLES - PENNSYLVANIA - *Attagenus piceus* moderate in home in Meadville, Crawford County, March 18; *Anthrenus scrophulariae* fairly abundant in home in Mifflintown, Juniata County, March 13. (Adams, Udine). OKLAHOMA - *Anthrenus verbasci* occurring in homes in Oklahoma City area. (Okla. Coop. Sur.).

A SPIDER BEETLE (*Gibbium psylloides*) - DELAWARE - Adults found in New Castle County home. (D. MacCreary).

COCKROACHES - UTAH - *Blattella germanica* and *Blatta orientalis* have been problems in a number of Salt Lake City and Salt Lake County homes. (Knowlton, Rose, March 25). *Supella supellectilium* infesting new home at Logan, Cache County. (Knowlton). MARYLAND - *Blatta orientalis* infested a Prince Georges County building. (U. Md., Ent. Dept.).

FACE FLY (*Musca autumnalis*) - MICHIGAN - Adults active about windows in Lansing area, Ingham County, March 24. (Dowdy).

A SPRINGTAIL (*Podura aquatica*) - MICHIGAN - Numerous in basements of houses in Livingston County. (Dowdy, March 25).

ANTS - MARYLAND - Winged forms of *Acanthomyops* spp. and *Monomorium* spp. swarmed out-of-doors on properties in Prince Georges County. (U. Md., Ent. Dept.). NORTH CAROLINA - *Acanthomyops interjectus* infested home in Wake County. (Wray). MICHIGAN - Inquiries indicate *Formica* sp. annoying to individual homeowners. (Dowdy, March 25).

SOUTHERN LYCTUS BEETLE (*Lyctus planicollis*) - UTAH - Damaged oak floors at Brigham City, Box Elder County, May 5, 1962. Det. by E. G. Gerberg. (Knowlton, Fullmer).

TERMITES - NEW JERSEY - Swarming of unspecified species reported from all sections of State. (Ins.-Dis. Newsltr.). PENNSYLVANIA - *Reticulitermes flavipes* noted in office building in Philadelphia. (Menusan, March 18). MARYLAND - Winged forms of *Reticulitermes* spp. noted in homes and buildings in Montgomery and Prince Georges Counties. (U. Md., Ent. Dept.). VIRGINIA - Winged forms of unspecified species reported from several locations. (Tarpley, et al.). ALABAMA - Populations of *Reticulitermes* spp. very heavy in wooded areas throughout Clay, Lee and Coosa

Counties. (Barwood). UTAH - Unspecified species infesting home at Harrisville, Weber County. (Knowlton).

CARPENTER ANTS (Camponotus spp.) - OKLAHOMA - Problem in several homes in Stillwater area, Payne County (north central). (Okla. Coop. Sur.). TEXAS - Infesting homes and causing concern to residents in Washington County. (Texas Coop. Rpt.; McClung).

STORED-PRODUCT INSECTS

SAW-TOOTHED GRAIN BEETLE (Oryzaephilus surinamensis) - TEXAS - Heavy, local infestation in stored milo in Mason County required treatment. (Garrett).

A DERMESTID BEETLE (Anthrenus sp.) - IDAHO - Scattered infestations noted in farm-stored grain at Arimo, Bannock County. (Brown).

CONFUSED FLOUR BEETLE (Tribolium confusum) - PENNSYLVANIA - Very abundant in mixed feed in barn in Youngsville, Warren County. (Adams, Mar. 19).

AN OSTOMATID BEETLE (Tenebroides sp.) - NEW MEXICO - Infestations medium to heavy in stored wheat and other grain bins in Clovis, Curry County. (N. M. Coop. Rpt.).

BENEFICIAL INSECTS

LADY BEETLES - OKLAHOMA - Several species becoming more active in alfalfa and small grains throughout State. (Okla. Coop. Sur.). KANSAS - Occasional Hippodamia convergens noted on wheat and alfalfa in southern part of State. (Somsen, Peters). MICHIGAN - Adalia bipunctata adults active near hibernation quarters as temperatures rose to 60° F. and above near Lansing, Ingham County, March 24. (Dowdy). PENNSYLVANIA - Adalia bipunctata noted about window of home at State College, Centre County, March 22. (Adams).

GREEN LACEWINGS (Chrysopa spp.) - OKLAHOMA - Becoming more active in alfalfa and small grains over State. (Okla. Coop. Sur.). KANSAS - Adults occasionally noted in wheat and alfalfa in southern part of State. (Somsen, Peters).

DAMSEL BUGS (Nabis spp.) - OKLAHOMA - Becoming more active throughout State in small grains and alfalfa. (Okla. Coop. Sur.).

PARASITES AND PREDATORS - ARKANSAS - Populations of hymenopterous parasites increasing. Predator activity remains low. (Ark. Ins. Sur.).

LEAFCUTTING BEES (Megachile spp.) - ARIZONA - Annoying many rose growers at present time. (Ariz. Coop. Sur.).

MISCELLANEOUS INSECTS

A WEEVIL (Euclyptus rutilus) - UTAH - Taken in Box Elder Canyon, Box Elder County, May 22, 1962. Det. by R. E. Warner. This is a new State record. (Knowlton).

A FLOWER FLY (Blera notata) - FLORIDA - Collected on firethorn (Pyracantha sp.) at Gainesville, Alachua County; previous collections made in Duval, Alachua and Gadsden Counties. (Weems, Mar. 24).

A NOCTUID MOTH (Amolita obliqua) - FLORIDA - Collected on house wall at Gainesville, Alachua County. (Esser, Mar. 20).

RED HARVESTER ANT (Pogonomyrmex barbatus) - OKLAHOMA - Activity continues to increase throughout southeastern and north central areas. (Okla. Coop. Sur.).

ADDITIONAL NOTES

MICHIGAN - Adults of CEREAL LEAF BEETLE (Oulema melanopa) found overwintering March 28 in folded leaves and straws at soil level, at bases of leaf sheaths of standing corn, in cracks of corn stubble, in rotting logs, in cracks in fence posts, and under loose bark of tree trunks and limbs. Many sites high and had not been covered with snow during winter. Survival seemed to be excellent in spite of severe winter. Many broken pieces of the beetle found in wetter sites. Nabids carabids, centipedes and ants were common in these wet sites and may have preyed on hibernating beetles. Beetles became active when held in the hand for only a few minutes. Few moved out of cracks in which they had overwintered, but did not leave hibernation areas, during last week of March when maximum temperatures were above 60° F. No evidence of spring flight observed to March 29. (Ruppel).

NEW MEXICO - GREENBUG (Schizaphis graminum) - Light in barley fields in Roswell, Chaves County; ranged 2-4 per linear foot. Light infestation of BROWN WHEAT MITE (Petrobia latens) building up in wheat in Melrose, Curry County. CLOVER MITE (Bryobia praetiosa) medium to heavy in some alfalfa near Hatch, Dona Ana County. PEA APHID (Acyrthosiphon pisum) light in alfalfa near Las Cruces, Dona Ana County. (N. M. Coop. Rpt.).

LIGHT TRAP COLLECTIONS

	Pseud.	Agrot.	Feltia	Perid.	Prod.	Spodop.	Heliothis	
	unip.	ips.	subterr.	saucia	ornith.	exigua	zea	vires.
FLORIDA								
Gainesville 3/25	1		4		1			
Northeast Gainesville 3/25-28			62					
GEORGIA								
Tifton 3/21-27	No collections.							
MISSISSIPPI								
*Stoneville 3/22-28	78	13		53	14	5	3	
SOUTH CAROLINA								
Charleston 3/25-31	6	2	6		2			
TEXAS								
*Brownsville 3/15-28	548	233	1968	622	98		1895	9

Additional Light Trap Collections

KANSAS, Manhattan (2/25-3/29) - *Paleacrita vernata* - Several males.

OREGON, Keizer (3/26-30) - *Plutella maculipennis* - Appearing.

TEXAS, Brownsville* (3/15-28) - *Protoparce quinquemaculata* - 24; *P. sexta* - 29; *Laphygma frugiperda* - 267

---

* Two traps - Stoneville; 6 traps - Brownsville.

SUMMARY OF INSECT CONDITIONS - 1962

(continued from page 311)

FOREST AND SHADE TREE INSECTS

Highlights:

Unprecedented epidemics of BARK BEETLES in the Western and Southern States, coupled with widespread outbreaks of defoliators in many places throughout the country, marked 1962 as a high-water mark in forest insect damage in the United States in the past decade. Cyclonic winds which uprooted and snapped off many thousands of trees in the coniferous forests in coastal Oregon and Washington, and elsewhere in the West and South, portend additional serious epidemics of bark beetles in these areas unless the windthrown trees are quickly salvaged. Many other insects, such as WESTERN HEMLOCK LOOPER, PITCH PINE LOOPER (*Lambdina athasaria pellucidaria*), ELM SPANWORM, TENT CATERPILLARS, PINE SAWFLIES, CANKERWORMS, ELM LEAF BEETLE, SMALLER EUROPEAN ELM BARK BEETLE, WEEVILS, SCALE INSECTS, LEAF MINERS and others that occurred in outbreak proportions at many places, also caused serious losses to forests and/or shade trees. Infestations of major significance are highlighted in the paragraphs to follow.

California's forests sustained greater damage from insects than at any time since the mid-1930's. The most serious problem was a WESTERN PINE BEETLE epidemic in ponderosa pine along the lower front of the Sierra Nevada. These infestations, extending from Placer County on the North to Kern County on the South, encompassed more than a million acres. Within this gross area, the beetles killed an estimated one billion board feet of timber. Public and private agencies attempted to control the epidemic. Bark beetles were also destructive in pine forests of Oregon and Washington. Western pine beetle developed to critical levels in southern Oregon, and the MOUNTAIN PINE BEETLE caused heavy tree losses along the Cascade Mountains of both States. The heavy windthrow in the coastal forests of Oregon and Washington resulting from the October 12,1962, typhoon, and strong winds in later storms, will provide ideal breeding grounds for the DOUGLAS-FIR BEETLE; and epidemic losses are probable in 1963 and 1964 unless the downed material -- some ten to twelve billion board feet -- is quickly salvaged. Control of the bark beetles in Oregon and Washington is being attained as quickly as possible. The most important problem in Utah, Wyoming and Idaho was the extremely aggressive MOUNTAIN PINE BEETLE attack in stands of lodgepole pine. More than forty epidemics, ranging in size from a few to over 160,000 acres, occurred in these States, and upwards of 400,000 trees were killed. Damaging infestations of DOUGLAS-FIR BEETLE and ENGELMANN SPRUCE BEETLE were also evident in Utah, Wyoming and Idaho, and major campaigns were undertaken to suppress the latter species. The BLACK HILLS BEETLE killed large numbers of ponderosa pine along the Front Range in Colorado and at other places, including Wyoming and South Dakota. The ENGELMANN SPRUCE BEETLE was particularly serious in high elevation spruce stands in northern New Mexico and at one location in Colorado.

Virulent and large-scale outbreaks of the SOUTHERN PINE BEETLE dominated the forest insect scene in the South and Southeast. Epidemics were most severe in Alabama, Georgia, Mississippi, North and South Carolina and Texas. The epidemics in the latter State grew from a gross infested area of 600,000 acres at the end of 1961 to an estimated 4,500,000 acres by July 1962. In Alabama, new infestations killed approximately 50,000 trees. Similar losses occurred in Mississippi. Explosive populations in the Piedmont area of Georgia and the Carolinas killed more than a million trees. Federal, State and private agencies waged major campaigns against these epidemics.

Among the shade tree insects, ELM LEAF BEETLE was rated the most important. Heavy populations damaged elms in areas of Arizona, and a heavy outbreak occurred in Oklahoma for the fifth consecutive year. It was by far the most serious pest of shade trees in Missouri and Kansas during the year, and continued heavier than normal and similar to previous years in Arkansas. The beetle caused extensive damage to elms in southeastern Nebraska and was responsible for heavy defoliation of elms in some Massachusetts towns. In addition, IMPORTED WILLOW LEAF BEETLE was again severe on many weeping willows in southern Maryland. Among the vectors of Dutch elm disease, SMALLER EUROPEAN ELM BARK BEETLE took on new significance in North Carolina during the year when the disease was diagnosed for the first time in Guilford County during mid-August. The disease was also recorded in several Kansas counties for the first time. NATIVE ELM BARK BEETLE was recorded for the first time during 1962 in Nebraska.

SPRUCE BUDWORM was prevalent in the forests of Utah, Wyoming and Idaho, and was epidemic on some two and one-half million acres of mixed-fir forests in Montana, and on approximately one million acres in northern New Mexico and southern Colorado. Spruce budworm remained serious in northern Minnesota and it worsened and spread in Maine. Aerial spraying for control of this pest was undertaken in areas of New Mexico, Colorado and Montana where tree killing was occurring or imminent; projects in 1962 totaled 982,000 acres, with excellent results in most areas. Spruce budworm, JACK-PINE BUDWORM and PINE TUSSOCK MOTH were sprayed by aircraft in Minnesota and Wisconsin. New infestations of pine tussock moth were discovered in Wisconsin; and jack-pine budworm was reduced by natural factors in most areas of Michigan and Wisconsin, by damaging infestations persisted in local areas. SPRING and FALL CANKERWORMS defoliated oaks and hickories in a number of Central and Northeastern States. A PITCH PINE LOOPER occurred in outbreak numbers in stands of pitch pine over much of Cape Cod. The GYPSY MOTH was abundant in the New England States, and was present outside the regulated area in Pennsylvania, New Jersey and New York.

Federal appropriations used to control forest insects on lands administered by Federal agencies, and for the Federal financial share of cooperative projects to suppress outbreaks on non-Federal lands in 1962 totaled $5,756,000. The major projects, their locations by States, and the approximate expenditures are as follows:

Project	Location	Expenditure
Mountain pine beetle	Utah, Idaho and Wyoming	$ 1,860,000
Southern pine beetle	South and Southeast	1,422,700
Engelmann spruce beetle	Rocky Mountains and New Mexico	710,600
Western pine beetle	California and Oregon	335,700
Black Hills beetle	Rocky Mountains, Wyoming and South Dakota	139,600
Black turpentine beetle	South and Southeast	99,000
Spruce budworm	Minnesota, Montana, Colorado, Washington and New Mexico	978,400
Jack-pine budworm	Michigan and Minnesota	63,400
Western hemlock looper	Oregon	46,500
Pine tussock moth	Wisconsin and Minnesota	41,200
Elm spanworm	North Carolina and Georgia	30,300
Miscellaneous bark beetles, weevils, shoot moths, sawflies, spittlebugs and others	Countrywide	28,600
	Total..........	$ 5,756,000

WESTERN PINE BEETLE (Dendroctonus brevicomis) losses increased in mature ponderosa pine stands in eastern and southern OREGON, particularly on the Ochoco, Fremont, Malheur and Deschutes National Forests. The trend of losses in that State is strongly upward. Typhoon Frieda left millions of feet of ponderosa pine blown down in southern Oregon forests and this may further prolong the current outbreaks. Some chemical controls may be needed in 1963. In WASHINGTON, losses by this beetle were generally lighter and less extensive in ponderosa pine forests. The trend is static to downward in Washington. Tree killing by western pine beetle was light in the northern half of CALIFORNIA. In the central and southern Sierra Nevada, ponderosa pine losses in the lower elevation stands continue, with 1962 losses estimated at about one million board feet. The epidemic has spread eastward to higher elevations and into better timber-growing sites in California. This outbreak was designated "The Mother Lode Infestation" by the California Forest Pest Control Action Council, and a special committee formed to expedite suppression action. Infested trees are being logged and direct control applied on selected areas. In southern California, unprotected Coulter and ponderosa pines showed a sharp increase in damage since 1961.

ALASKA SPRUCE BEETLE (Dendroctonus borealis) populations increased in ALASKA several-fold in 1962 and caused moderate damage to spruce stands on the Kenai Peninsula and in the Copper River area. The rate of tree killing was below epidemic proportions, but the upward trend of populations portends more serious losses in 1963. An infestation of ROUNDHEADED PINE BEETLE (Dendroctonus convexifrons) in ponderosa pine in the vicinity of Bonito Lake,Lincoln National Forest, NEW MEXICO, continued at a high level.

Tree killing by ENGELMANN SPRUCE BEETLE (Dendroctonus engelmanni) was below normal in 1962 in OREGON and WASHINGTON. In Oregon, the principal infestations were centered on the Umatilla, Wallowa-Whitman and Willamette National Forests. The majority of damage in Washington occurred on the Umatilla National Forest. The trend of infestations in both States is upward. Direct control is not necessary in 1963; however, currently infested trees should be logged in accessible areas. Heavily infested areas should be clear-cut. For the first time in many years, there were no serious infestations of Engelmann spruce beetle reported in the northern Rocky Mountains. Engelmann spruce trees blown down by strong winds in the South Fork Flathead River Drainage, MONTANA, were readily attacked, but they were promptly salvaged and a possible outbreak was thus averted. An infestation on the Dixie National Forest, UTAH, was detected during the fall months and logging began. Only cleanup should be needed in 1963. Another infestation in the Upper Green River area, Bridger National Forest, WYOMING, has been active for a number of years, and an all-out suppression effort was directed against the infestation in 1962. For the last three years, there has been a slow but steady increase in Engelmann spruce beetle activity on the Teton National Forest, Wyoming; Fishlake National Forest, Utah; and Payette National Forest, IDAHO.

Engelmann spruce beetle was less of a problem in the central Rocky Mountains than in 1961. However, infestations of significance occurred at two locations, and each will need to be suppressed to prevent intensification of tree killing and spread. The most serious problem was on the San Juan National Forest, south of Rico, COLORADO. There, several thousand overmature spruce trees were blown down by strong winds in October of 1961. These downed trees have since become infested and the emerging population poses a threat to standing green trees. The infestation on the San Juan and Rio Grande National Forests, in the vicinity of Wolf Creek Pass, southern Colorado, remained at a high level. Two major Engelmann spruce beetle outbreaks which have developed during the past several years continued in mature and overmature spruce stands in northern NEW MEXICO. Four new outbreak centers were noted in 1962 on the Carson and Santa Fe National Forests of New Mexico. Also, a new center of beetle activity was noted on the Coconino National Forest near Flagstaff, ARIZONA.

The SOUTHERN PINE BEETLE (Dendroctonus frontalis) epidemic in east TEXAS grew from 600,000 acres at the end of 1961 to an estimated 4,500,000 acres by mid-June 1962. Approximately 20,000 acres of timber had been killed. During the latter part of July, there was a noticeable decline in spread of the beetle in this area of Texas, possibly due to unusually high temperatures or to predation by mites. Aerial and ground observations during November showed a continued decline in beetle populations. Southern pine beetle activity continued in southwestern MISSISSIPPI. Aerial survey of the Homochitto National Forest in July revealed that the number of beetle spots had increased from 14 to 61, and the number of trees per spot from 3.1 to 6.2 since April. In ALABAMA, southern pine beetle infestations were centered on the Talladega National Forest. Aerial surveys in September revealed approximately 50,000 infested trees.

Southern pine beetle continued at epidemic levels during 1962 on National Forests and private lands in portions of north GEORGIA. Since mid-March, the Georgia Forestry Commission removed and treated approximately 400,000 infested trees. Through prompt and aggressive action, the Commission reduced the beetle below epidemic proportions in 20 of 26 counties designated as critical. A stepped-up control program during the winter months (1962-63) is being stressed, with the objective of removing all known infested trees before beetle emergence in the early spring. A control program is also active on the Chattahoochee National Forest of Georgia. Southern pine beetle was the most destructive forest insect reported in SOUTH CAROLINA during 1962. Outbreaks were detected over a 19-county area in the upper Piedmont section, with an estimated 346,000 trees infested. Heaviest infestations occur in Fairfield, Lancaster, Newberry, Spartanburg, Union and York Counties. Large-scale control efforts have been in progress since 1959 and have prevented greater losses. Control programs are also active on the Sumter and Francis Marion National Forests of South Carolina.

Southern pine beetle severely damaged pines in NORTH CAROLINA, with outbreaks centered in two areas; one in vicinity of Charlotte, including Gaston, Mecklenburg and Union Counties, and the other near Lexington, including Davidson, Davie and Rowan Counties. The northern boundary of the latter area was not well defined by the aerial survey early in October. However, one 18-square-mile area was spotted in Yadkin County, and small scattered areas of infestation were observed in Forsyth, Guilford and Stokes Counties. An estimated 200,000 infested trees were found in the first seven mentioned North Carolina counties. In VIRGINIA, scattered infestations of southern pine beetle developed late in the summer in the Piedmont area. On the Eastern Shore of Virginia, populations were negligible where they had been significant for the past few years. Quick salvage of killed and dying trees was undertaken by the State. Follow-up aerial surveys were planned, with emphasis on salvage cuttings to bring the infestation under control. The number of active spots by counties (August 1962 to February 1963) was 119 in Cumberland, 34 in Fluvanna, 36 in Prince Edward, 14 in Buckingham, 34 in Charlotte, 106 in Powhatan, 62 in Goochland, 1 in Northampton and 38 in Accomack. The outbreak in 1962 killed 1,200 acres of pines in six central counties.

JEFFREY PINE BEETLE (Dendroctonus jeffreyi) damage remained low in northern CALIFORNIA, but significant Jeffrey pine tree killing in southern California occurred at four locations in San Bernardino County.

MOUNTAIN PINE BEETLE (Dendroctonus monticolae) continued to cause very high losses to western white pine, lodgepole pine and young ponderosa pine in OREGON and WASHINGTON, but the total infested acreage decreased slightly. The majority of losses in western white pine stands were centered on the Gifford Pinchot National Forest in Washington and on the Mt. Hood National Forest in Oregon. Aggressive logging operations to salvage infested trees were undertaken on heavily affected areas on the Mt. Hood National Forest. Similar operations will be started in 1963 on the Gifford Pinchot National Forest. The largest outbreaks in lodgepole pine stands occurred on the Winema, Fremont and Deschutes National Forests in Oregon and on the Colville National Forest in Washington. Attacks in stagnated pole-size ponderosa pine stands decreased in Oregon and remained static in Washington. Maintenance control was carried on against this beetle in lodgepole pine stands in Crater Lake National Park, Oregon. Outbreaks of mountain pine beetle in CALIFORNIA were confined to the northeastern area and to the lower elevation stands in the central and southern Sierra Nevada. An outbreak in young-growth sugar and ponderosa pine in Mariposa and Madera Counties increased sharply, and tree killing in 1962 on 10,800 acres was estimated at 53,000 trees and six million board feet.

The mountain pine beetle has caused serious losses in overmature stands of western white pine in northern IDAHO for many years. Chronic infestations persist on portions of the Kaniksu, Clearwater, St. Joe and Coeur d'Alene National Forests where from two to five percent of the trees are killed annually. The most serious infestation in 1962 occurred within about 2,000 acres in the Priest River Drainage, near the Canadian border. Salvage of the infested trees is being encouraged as a method of control. Infestations in ponderosa pine were reported only from one area in the northern Rocky Mountains -- 10 miles southwest of Craigmont, Idaho. At that location, pole-size trees were lightly attacked on some 400 acres. Beetle populations increased slightly within the isolated stands of lodgepole pine in the northern part of Glacier National Park, MONTANA. This infestation was first discovered in 1950, and has fluctuated from year to year. Direct control has not been considered feasible.

In general, the mountain pine beetle was extremely aggressive throughout the lodgepole pine forests in the Intermountain States. Control projects significantly reduced the number of infested trees, in spite of the fact that the beetles had a tendency to more than double their own number. Control work will need to be continued to reduce further wholesale tree killing over extensive areas. There were three major control projects in 1962 -- on the Washatch National Forest, UTAH; Teton National Forest, WYOMING; and Targhee National Forest, IDAHO. State, private and Federal land managers are cooperating to suppress a relatively new outbreak in lodgepole pine near McCall, Idaho. Over 1.5 million board feet of infested trees were logged on and near the Targhee National Forest. In addition, nearly fifteen million board feet of infested timber were sold and will be logged early in 1963. Near Dubois, WYOMING, mountain pine beetle remained a serious problem in stands of lodgepole pine; approximately 19,000 trees were killed. Plans are being made to suppress the outbreak.

Five outbreaks of BLACK HILLS BEETLE (Dendroctonus ponderosae) occurred in stands of ponderosa pine in the central Rocky Mountains. On the Pike National Forest, near Lake George, COLORADO, approximately 96,120 trees were killed on 38,160 acres. In the northern Black Hills, near Deadwood, SOUTH DAKOTA, some 20,680 trees were killed -- an increase over infestations in that area in 1961. Populations remained high in the Bighorn Mountains in WYOMING; in the north Powderhorn area, near Gunnison, Colorado; and in an area southwest of Pueblo, Colorado. Federal and State agencies plan to suppress the outbreaks in all affected areas of central Rocky Mountains. On the Mountainair District, Cibola National Forest, NEW MEXICO, an aggressive infestation of Black Hills beetle has attacked most of the remaining limber pine. No control is planned unless the beetle attacks ponderosa pine at lower elevations in the area.

DOUGLAS-FIR BEETLE (Dendroctonus pseudotsugae) outbreaks declined in both OREGON and WASHINGTON in 1962. In Washington, the largest remaining infestations are on the Okanogan and Colville National Forests and on the Colville Indian Reservation. In Oregon, the heaviest and most extensive losses occurred on the Wallowa-Whitman and Umatilla National Forests. The damage trend is downward in Washington and varies with the locality in Oregon. Salvage of the extensive windthrow left in the wake of the October 12 storm is a must to minimize population increases that may result in extensive tree killing in 1964. Little tree killing was reported in CALIFORNIA. One small infestation in Shasta County was suppressed by logging the infested trees. In the northern Rocky Mountains, the level of losses sustained in Douglas-fir stands in 1962 point to the beginning of a new outbreak. Long-term records indicate that outbreaks seem to occur at intervals of five to seven years. In MONTANA, an increased rate of tree killing occurred on the Deerlodge National Forest, near Wise River; on the Seeley Lake Ranger District, Lolo National Forest; and along the Thompson River and Fisher River Valleys. In IDAHO, small groups of infested trees also were reported from the Clark Fork and Pend Oreille River Valleys, and on the Powell Ranger District, Clearwater National Forest. Infested trees will be logged from all affected areas of the northern Rocky Mountains where sales can be made.

In the Intermountain States, damage caused by the Douglas-fir beetle was heaviest on the National Forests of southern UTAH and southern IDAHO. Douglas-fir stands on the Dixie National Forest, Utah, and Sawtooth National Forest, Idaho, were particularly hard hit. Tree killing in most areas of the Intermountain States is expected to continue at the same high level in 1963. On the Sublette Division, Sawtooth National Forest, a large commercial sale is in operation, with the intent of salvaging infested trees and utilizing the host material. Douglas-fir beetle infestations were at low endemic levels in all but one location in stands of Douglas-fir in the central Rocky Mountains. The single exception was an outbreak in the north Powderhorn area, southwest of Gunnison, COLORADO, where some 5,560 trees were killed. Douglas-fir beetle persisted in damaging numbers throughout stands of Douglas-fir in ARIZONA and NEW MEXICO. Tree killing was most serious on portions of the Santa Fe and Cibola National Forests, New Mexico, and the Kaibab National Forest, Arizona. An infestation of consequence also was reported on the Mt. Graham Recreational area, Coronado National Forest, Arizona. To the extent possible, killed trees were logged as a means of control.

BLACK TURPENTINE BEETLE (Dendroctonus terebrans) was found at several locations in the Central States in and adjacent to stands cut or thinned. Light to moderate damage was reported in thinned and fire-damaged stands of shortleaf pines in south central MISSOURI. In the naval stores area of north FLORIDA, south GEORGIA and MISSISSIPPI, black turpentine beetle was on the increase in 1962. The loss was reported the greatest since the drought of the 1950's in the Georgia-Florida area. Unless climatic and environmental factors change drastically during the winter, a continued upward trend in population density is expected. In the remaining portion of the Southern States, this pest was at a relatively low level through July, with some general increase in activity during the latter part of the season. The black turpentine beetle causes extensive losses throughout the pine belt of the Southern States each year.

RED TURPENTINE BEETLE (Dendroctonus valens) infestations were abundant in most commercial pine stands in CALIFORNIA, but tree killing was restricted to a few infestations. An aggressive outbreak developed in fire-damaged ponderosa pine at Browns Flat, Los Angeles County. This bark beetle, normally a minor pest in the northern Rocky Mountains, was abundant and destructive in 1962. In stands of ponderosa pine that had been thinned and pruned in eastern MONTANA, as much as 75 percent of the residual trees was attacked. The full circumference of the lower boles, often up to four feet from the ground, were heavily infested. Damage was most pronounced in thinned stands on the Northern Cheyenne Indian Reservation. Another seriously affected area was in the Long River Area, Custer National Forest. Control of the infestations was attempted by spraying the lower boles. In MICHIGAN, red turpentine beetle was reported damaging the residual stand in a thinning area of the St. Ignace District, Hiawatha National Forest.

An OREGON PINE IPS (Ips oregonis) increased in OREGON on young ponderosa pine sapling stands, particularly on the Wallowa-Whitman, Malheur and Umatilla National Forests. Outbreaks of this species in WASHINGTON decreased. Damage to ponderosa pine by Ips spp. decreased sharply in CALIFORNIA, particularly in the central and southern Sierra Nevada and in southern California. In this State, the decline is believed due to heavy late winter and early spring precipitation and to cool weather during the late spring and early summer. There was a noticeable decline in the rate of tree killing by I. oregonis throughout the stands of ponderosa pine in north IDAHO and MONTANA. The beetles were abundant, however, in slash in stands thinned from May through July, particularly on the Northern Cheyenne Indian Reservation, Montana. The slash in this area was treated. Another species of ips, I. ponderosae, often associated with I. oregonis in affected areas of northern Idaho and Montana, also was abundant in pine slash. Tree killing, however, was not severe. Ips spp. were active in local areas of pinyon pine in eastern UTAH and ponderosa pine in southern IDAHO. In the Black Hills of SOUTH DAKOTA and WYOMING, I. oregonis populations declined sharply. The decline is attributed to above average precipitation in 1962, the second wettest year on record. Little or no damage is predicted for 1963 in this area. Ips lecontei heavily damaged ponderosa pines locally on the Prescott National Forest, ARIZONA.

A CALIFORNIA FIVE-SPINED IPS (Ips confusus) infestation on pinyon pine near Walnut Canyon National Monument, ARIZONA, decreased and no longer poses a threat to pinyon stands in the Monument. The infestation originated in cabled pinyon pine in 1960. No newly infested trees were found in the area in 1962. About 20 trees were attacked by this ips around the perimeter of the piled pinyon debris from a road improvement project at Grand Canyon National Monument, Arizona.

A severe infestation of PINE ENGRAVER (Ips pini) was reported in a portion of the Hiawatha National Forest, MICHIGAN, where pulpwood was cut the previous winter and left in piles along the roads over the summer. Similar conditions were observed on a portion of the Lower Michigan National Forest. Scattered trees were killed in a thinned red pine plantation near Brownstown, INDIANA, and many shortleaf pines were killed in and adjacent to a burned area south of Salem, MISSOURI. An unidentified species of ips was reported as damaging to young red pines on the Cadillac District of the Lower Michigan National Forest.

IPS (Ips spp.) activity increased during the summer in the Southern States, and populations were very aggressive in portions of TEXAS, ARKANSAS, LOUISIANA, MISSISSIPPI and ALABAMA. Attacks were found to precede southern pine beetle activity on the Texas National Forest by as much as two weeks. In Louisiana, bark beetles, especially I. avulsus and black turpentine beetle, infested and killed pines in many localized areas over the pine-growing areas of the State. Trees struck by lightning and drought contributed materially to the spread of these infestations in Louisiana. In FLORIDA, there were no reports of unusual ips activity in the State, although scattered, localized populations are still at higher-than-normal levels as a result of the damage from Hurricane Donna and recent wildfires. Ips activity in GEORGIA was scattered and localized. In NORTH and SOUTH CAROLINA, I. calligraphus and I. avulsus were commonly associated in trees attacked by southern pine beetle and black turpentine beetle. Ips buildup was particularly noticeable along the southern boundary of the southern pine beetle outbreak areas in the Piedmont section of the Carolinas.

CEDAR BARK BEETLE (Phloeosinus squamosus) infestations recurred in scrub stands of Alaska cedar on Prince of Wales, Baranof and Kupreanof Islands, ALASKA. In all cases, tree killing was confined to stands growing on poor sites. CEDAR BARK BEETLES (Phloeosinus spp.) generally built up in incense cedar at lower elevations in the Sierra Nevada of CALIFORNIA. The apparent cause of the buildup was a persistent drought condition that weakened the trees. In many cases, drought is believed to be the direct cause of cedar mortality. Another BARK BEETLE (Myeloborus sp.) killed twigs of white pine in Washington County, RHODE ISLAND, during 1962. Galleries contained pupae and/or adults on August 7.

The acreage of FIR ENGRAVER (Scolytus ventralis) infestations in OREGON and WASHINGTON doubled during 1962. The largest increases occurred in Oregon on the Umatilla, Fremont, Wallowa-Whitman and Ochoco National Forests. Buildups also occurred on the Snoqualmie and Umatilla National Forests in Washington. Much of the mortality was in low value, overmature and decadent true fir stands; however, some occurred in apparently thrifty young stands and, in some places, wiped out Christmas tree values. Outbreaks generally build up during drought periods and subside quickly when moisture conditions return to normal. Fir engraver continued to kill large numbers of red and white fir in all but the north coastal section of CALIFORNIA. Infestations were probably the heaviest in years. Tree mortality again was most severe in the Warner Mountains, Modoc County, in Lassen County, and throughout much of the central and southern Sierra Nevada. Sanitation and salvage logging have been used to aid in reducing infestations and restricting spread. In northern IDAHO, large populations developed in stands of grand and subalpine fir during the long, dry summer of 1961. The results of the population buildup were clearly evident in 1962 when severe fir engraver infestations were noted in several areas. The heaviest infestation, encompassing some 116,000 acres, extended south from Dent on the North Fork, Clearwater River, to the Middle Fork and east from Orofino to Pierce. Severe tree killing also occurred on approximately 51,000 acres of the St. Joe National Forest in Idaho. Moderate infestations were reported on some 9,000 acres south of Winchester on the Salmon River, and light infestations occurred on 4,600 acres of the Coeur d'Alene and Nezperce National Forests, Idaho. The heaviest damage in MONTANA occurred on about 2,000 acres east of Big Fork. A persistent infestation of fir engraver in stands of white fir on Sandia Mountain, Cibola National Forest, NEW MEXICO, began a natural decline in 1960. The downward trend continued in 1961 and 1962. An infestation discovered on the Rim Unit of the Coconino National Forest, ARIZONA, in 1961 remained active.

Fir engraver and WESTERN BALSAM BARK BEETLE (Dryocoetes confusus) have killed many thousands of true fir trees throughout the Intermountain States during the past few years. Infestations vary from a few acres in size to hundreds of acres. The majority of the affected stands are in rather inaccessible areas and have relatively low economic value. Thus, control of infestations is rarely undertaken except in high value recreation areas. Western balsam bark beetle was endemic during 1962 in COLORADO and WYOMING. The rate of tree killing by this bark beetle remained high in stands of corkbark and alpine fir in NEW MEXICO. Tree mortality increased on the Santa Fe National Forest, and was particularly severe on about 40,000 acres near Red River in Carson National Forest.

A few outbreaks of DOUGLAS-FIR ENGRAVER (Scolytus unispinosus) that were of minor importance occurred on the drier sites on the Colville and Kaniksu National Forests in WASHINGTON and on the Mt. Hood National Forest in OREGON. The trend of damage is downward. No control is needed in 1963. In MONTANA, two outbreaks were discovered in 1962. West of Ravalli, the engraver killed groups of pole-size trees, from 20 to 100 trees per group, throughout some 1,800 acres. Within the Mormon Creek Drainage, the beetle killed more than 1,600 pole-size trees on about 600 acres.

COLUMBIAN TIMBER BEETLE (Corthylus columbianus) populations in INDIANA were at the lowest densities in many areas of the State since 1954.

SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus), which was reported for the first time in NORTH CAROLINA during 1946 from Davidson and Martin Counties, took on new significance during 1962 as a potential vector of Dutch elm disease, when the disease was found for the first time in the State during mid-August in Greensboro, Guilford County. This vector of Dutch elm disease continued to be important in the northern portion of INDIANA where the disease is important. Adults of smaller European elm bark beetle began emerging about May 15 in southeastern WISCONSIN, but populations had subsided by mid-June. A total of 7,196 cases of Dutch elm disease was confirmed in the State during the season; a total of 24 counties and 201 municipalities presently have confirmed cases of the disease. During the 1962 season, Dutch elm disease was reported for the first time in Brown, Grant, Iowa, Sauk and Waushara Counties. Two cases of Dutch elm disease were diagnosed in MINNESOTA during 1962, both in the Monticello area, Wright County, about 40 miles northwest of the Twin Cities. Smaller

European elm bark beetle was located in Dakota, Faribault, Fillmore, Freeborn, Goodhue, Hennepin, Mower, Olmsted and Washington Counties for the first time during 1962. The area in which this beetle is present now includes virtually the entire southeastern section of Minnesota northward to Washington and Hennepin Counties and westward to Faribault and Blue Earth Counties. This bark beetle was found in very high numbers throughout St. Paul, creating the possibility of rapid spread of Dutch elm disease in that city.

Smaller European elm bark beetle was reported only once in SOUTH DAKOTA during 1962. Adult and larval stages were found in a sample of dead wood from a hackberry tree in Sioux Falls, Minnehaha County. Dutch elm disease is not known in South Dakota. Although this bark beetle has been present throughout the eastern two-thirds of KANSAS for over 10 years, the 1962 season was notable for the rapid spread of Dutch elm disease, which was reported for the first time from Wichita in Sedgwick County, Junction City in Geary County, and in Brown and Jackson Counties in July. Smaller Europen elm bark beetle infested elm trees in COLORADO, and continued to damage and cause death of elms at several locations in CALIFORNIA. In areas of California where control was applied, populations of this beetle were reduced to the extent that only an occasional light infestation could be found.

NATIVE ELM BARK BEETLE (Hylurgopinus rufipes) was recorded for the first time in NEBRASKA during 1962, when it was noted feeding on American elm in Seward County. Adults began emerging about mid-May in WISCONSIN, but populations had subsided by mid-June.

CALIFORNIA FLATHEADED BORER (Melanophila californica) - In southern CALIFORNIA, tree mortality was down from the peak epidemic years of 1957-1959, but significant Jeffrey pine tree killing continued in some of the recreation areas of San Diego, Riverside and Kern Counties. Infestations of California flatheaded borer in ponderosa pine in Modoc and Lassen Counties, and in the southern half of the Sierra Nevada showed some increase. Infestations in individual ponderosa pines were often associated with activities of the western pine beetle. FLATHEADED FIR BORER (M. drummondi) caused group killing in scattered Douglas-fir stands of the central Sierra Nevada.

SUGAR-PINE CONE BEETLE (Conophthorus lambertianae) caused light losses of an excellent sugar pine cone crop in CALIFORNIA, and WHITE-PINE CONE BEETLE (C. coniperda) was abundant in central MAINE where aborted cones were numerous on the ground beneath trees. SILVER-FIR BEETLES (Pseudohylesinus spp.) losses were very light in Pacific silver fir stands in OREGON and WASHINGTON.

FLATHEADED APPLE TREE BORER (Chrysobothris femorata) caused, or was a contributing factor to, the death of several thousand elm trees along a creek in Haakon County, SOUTH DAKOTA. It is believed that the borers finished what the drought of previous years had failed to do. Severe injury by BRONZE BIRCH BORER (Agrilus anxius) was noted on several trees in a nursery in New Castle County, DELAWARE. Another BUPRESTID (Brachys ovatus)caused extensive browning to oaks in the Rumford region of Oxford County, MAINE.

TWIG GIRDLER (Oncideres cingulata) damaged oak, hickory and pecan shade trees in some localities of VIRGINIA and elms in localities over KANSAS. First twig girdler damage of the 1962 season in OKLAHOMA was reported in late September and continued into early November, being most common in the eastern half of the State. TWIG PRUNER (Elaphidion villosum) damaged oaks in MISSOURI. Twig pruner was very common on roadside oaks in Providence, Kent and Washington Counties, RHODE ISLAND, being first noted June 19. LOCUST BORER (Megacyllene robiniae) was reported damaging in many localities in eastern areas of WASHINGTON during the season. Locust borer was also damaging at several locations on the Wayne-Hoosier National Forest in OHIO and INDIANA, and in an area near Jonesboro, ILLINOIS. A ROUNDHEADED BORER (Tetropium velutinum) attacked weakened, overmature larch at two locations in MONTANA -- in the South Fork Flathead River area and the Mormon Creek Drainage, Lolo National Forest. COTTONWOOD BORER (Plectrodera scalator) continued to infest willow, cottonwood and poplar over LOUISIANA. Some young cottonwood plantations had about 10 percent breakage by this species. In TEXAS, a CERAMBYCID BEETLE (Neoclytus sp.) caused concern in some central counties by attacking mesquite trees, and several other species of cerambycid beetles damaged various shade trees in most areas.

Infestations of ELM LEAF BEETLE (Galerucella xanthomelaena)on elms in CALIFORNIA were variable from Fresno County north during the 1962 season. The species was a general pest and required considerable control, as elm is a popular street and yard tree in the State. Elm leaf beetle was found for the first time in Lincoln County, NEVADA, where it caused only light damage, and in the St. George area of Washington County, UTAH, for new county records in those States. Heavy populations of this leaf beetle damaged elms in some areas of ARIZONA from May throughout the summer and fall months of 1962. Elm leaf beetle was found defoliating Chinese elms in Quay, Bernalillo and Santa Fe Counties, NEW MEXICO, the collection at Tucumcari, Quay County, being the first collection in the State. The species also infested elms in COLORADO during the season.

Elm leaf beetle caused moderate to severe damage to elm trees in northwest TEXAS during the 1962 season, and a heavy outbreak occurred in OKLAHOMA for the fifth consecutive year, causing heavy defoliation throughout the State. First migration from hibernation quarters began in late February in Oklahoma, but general feeding and egg laying did not begin until about May 1. Destructive activity was reported in Oklahoma into early September. Elm leaf beetle infestations continued heavier than normal and similar to those present the previous year in ARKANSAS; and the species was by far the most serious pest of shade trees in MISSOURI, with defoliation of elms observed in areas throughout the State. Elm leaf beetle was also the most serious problem on shade trees in KANSAS. Various stages of development were reported for the first time in Ellis, Ellsworth, Lane, McPherson, Marshall, Pawnee, Rice, Russell, Saline, Scott, Stafford and Trego Counties during 1962, and typical injury was found on trees in several other counties during the season. Injury was nearly insignificant throughout the first and second generations in Kansas, but in late July through August and into September, injury was severe. Elm leaf beetle caused extensive damage to elm trees in southeastern NEBRASKA. The first elm leaf beetle larvae of the season in ILLINOIS were observed in Champaign County on May 17. The pest was abundant throughout the southern two-thirds of the State and caused severe browning of Chinese elm trees. Elm leaf beetle was extremely abundant on Chinese elms in the greater Lafayette area of Tippecanoe County, INDIANA, during 1962, and many complaints of damage and requests for control recommendations were received during the month of August.

Elm leaf beetle infestations were more general in GEORGIA during 1962 with many elm trees being defoliated, but the pest caused only local damage in VIRGINIA.

Adult elm leaf beetle feeding was evident by May 25 in RHODE ISLAND. Infestations were especially heavy and general in the East Greenwich area of Kent County, but varied from tree to tree elsewhere in the State. Elm leaf beetle caused heavy defoliation in some MASSACHUSETTS towns,and light to very heavy defoliation in many communities in the lower two-thirds of VERMONT. Elm leaf beetle populations were moderately heavy in NEW HAMPSHIRE, particularly during the first-brood period, and began appearing about May 17 in southern MAINE, being abundant and locally active on that date.

Adults of LARGER ELM LEAF BEETLE (Monocesta coryli) were first submitted for determination in NORTH CAROLINA from Cabarrus County in mid-July, and were subsequently received up to the last of August from Cumberland, Chatham, Guilford, Iredell and Orange Counties. This species attracted more attention in North Carolina than elm leaf beetle because of its size and the lack of familiarity by the public. In SOUTH CAROLINA, 1962 was the second year of heavy infestations of larger elm leaf beetle on American elms in counties adjacent to Union County.

IMPORTED WILLOW LEAF BEETLE (Plagiodera versicolora) was severe again on many weeping willows in the southern area of MARYLAND, and adults appeared in late May in RHODE ISLAND, with infestations present statewide throughout the 1962 season. Imported willow leaf beetle was common in the Brunswick area of Cumberland County, MAINE.

Also in Maine, ELM FLEA BEETLE (Altica ulmi) began appearing about May 17 in the southern portion of the State, being locally abundant and active on that date. There was some confusion as to the damage this pest caused in Maine during 1962. A complex of LEAF BEETLES (Chrysomelina scripta complex) defoliated dooryard willow trees in Houston, Harris County, TEXAS.

Damage caused by WHITE-PINE WEEVIL (Pissodes strobi) was extensive in pine plantations in Upper and Lower MICHIGAN. White pine, red pine, Jack pine and white spruce were affected, with an increase in the weeviling of leaders at several locations. A total of 436 acres of State land was treated. Damage to host trees was less noticeable in WISCONSIN and MINNESOTA. Infestations in the latter States were spotty and populations were at lower levels than in 1961. White-pine weevil continued to be the major insect pest of white pine in the Northeast and is fairly well distributed throughout the range of its host tree. Reports indicate a general increase in weeviling throughout the Northeast. Suppression with ground equipment was carried out on only a few hundred acres, mostly in PENNSYLVANIA and NEW YORK. Heavy populations and damage were observed throughout Androscoggin and Sagadahoc Counties, MAINE, on white pine, and the weevil was somewhat more abundant in NEW HAMPSHIRE than in 1961. In RHODE ISLAND, numerous adults were present on hosts in Kingston, Washington County, May 10. An average amount of damage showed statewide in Rhode Island by midsummer.

A WEEVIL, tentatively identified as DEODAR WEEVIL (Pissodes nemorensis), was reported damaging slash and longleaf pine stands in GEORGIA in Tift, Crisp, Wilcox and Coffee Counties. Young trees were most commonly attacked, but infestations in mature stands were not uncommon. Deodar weevil was also reported infesting young loblolly pine plantations near Aimwell, LOUISIANA. Trees were girdled by larval feeding in the inner bark near the ground level. Similar damage was reported in several areas in northern Louisiana. In INDIANA, P. approximatus was discovered killing two and three-year-old pine transplants in Jefferson County. The larvae fed beneath the bark above the soil line and girdled the plant. Pupation occurred in June within the typical "chip" cocoon. In MONTANA, P. curriei attacked root collars of small western white pines in Glacier National Park.

PALES WEEVIL (Hylobius pales) was reported active in recently cut pine areas throughout ARKANSAS, and damage was reported on 3,000 acres of one to four-year-old pines in late November near Bolton, NORTH CAROLINA. Pales weevil was quite common throughout the Northeast, with damage restricted to planted pine. Considerable damage to natural pine seedlings and in Christmas tree plantings was reported from southern PENNSYLVANIA. Newly planted loblolly pine on the Pocomoke State Forest in MARYLAND was heavily attacked, but natural reproduction was only slightly damaged. Severe mortality also occurred on 70 acres of planted white pine in Floyd County, VIRGINIA. PINE ROOT COLLAR WEEVIL (H. radicis) infestations were rather general on lighter soils in northwestern Lower MICHIGAN in Scotch, red and jack pine plantations. This species is one of the most important conifer pests in the State.

A PINE REPRODUCTION WEEVIL (Cylindrocopturus eatoni) continued to kill ponderosa pines in plantations and in natural reproduction throughout the low elevation central Sierra Nevada pine type in CALIFORNIA. The heaviest damage occurred in Tuolumne County.

An unusual outbreak of a LEAF-MINING WEEVIL (Prionomerus calceatus) occurred in central and southeastern KENTUCKY on yellow-poplar. Damage was attributed to both larval and adult feeding. A drought following this infestation caused considerable damage to weakened trees. Surveys to determine the limits and intensity of this infestation will be carried out in 1963.

A TWIG BEETLE (Pityophthorus pseudotsugae) was responsible for killing a stand of young red fir in Siskiyou County, CALIFORNIA, that had been thinned to promote Christmas tree production. This twig beetle also was found to have damaged white fir young-growth in several localized areas of northern California.

STRAWBERRY ROOT WEEVIL (Brachyrhinus ovatus) larvae severely damaged evergreen seedlings in MONTANA State Forest Nursery in Missoula, Missoula County. POPLAR-AND-WILLOW BORER (Sternochetus lapathi) was reported as damaging in eastern localities of WASHINGTON during 1962, and feeding damage by RED ELM BARK BEETLE (Magdalis armicollis) occurred on elms in Richardson County, NEBRASKA. A JAPANESE WEEVIL (Pseudocneorhinus bifasciatus) caused occasional, local damage in VIRGINIA during the season.

PINE CHAFER (Anomala oblivia) built up rapidly in Montmorency County, MICHIGAN, where heavy defoliation occurred on jack and red pines. Infestations continued spotty in northwestern Lower Michigan. Two SCARABS (Dichelonyx crotchi and D. vicina) destroyed 90 percent of the new cones on individual ponderosa pines in the Poison Lake Seed Production Area of Lassen County, CALIFORNIA. This was the first time these insects have been known to cause serious cone damage. JAPANESE BEETLE (Popillia japonica) caused heavy defoliation of roadside trees in most of VIRGINIA and eastern WEST VIRGINIA. Adults of a MAY BEETLE (Phyllophaga koehleriana) caused considerable damage to trees in Cimarron County, OKLAHOMA.

LOCUST LEAF MINER (Xenochalepus dorsalis) was abundant in Mason County and portions of McLean County, ILLINOIS, and was reported for the first time in Fulton and Sangamon Counties during 1962. Locust leaf miner damaged black locust foliage in several areas of INDIANA, mining of leaflets causing foliage to turn brown as if scorched by fire. Infestations were reported heavy throughout most of OHIO. Locust leaf miner was common especially around Augusta and Loudoun Counties, VIRGINIA, and caused noticeable foliage injury to black locust in most sections of MARYLAND during the season. This pest was fairly abundant on honeylocust and honeylocust hybrids in PENNSYLVANIA and, although sometimes abundant in RHODE ISLAND, it was rare during the season, with only one adult being seen.

Needle feeding on seedling and sapling slash pine by adults of PINE COLASPIS (Maecolaspis pini) was more widespread and intense during 1962 in the Southeast than in the past several years. Peak feeding and damage occurred about June 18. The infestation extended from Bartow, FLORIDA, north to Savannah, GEORGIA, and west to Marianna, Florida. In LOUISIANA, pine colaspis defoliated many small pine plantings in the south and central areas of the State. Leaf feeding by adults of a FLEA BEETLE (Systena marginella) occurred over the entire Peninsula of FLORIDA and through the cypress ponds of south GEORGIA. Although the brown, scorched appearance of infested trees caused much comment, control was not deemed necessary.

SPRUCE BUDWORM (Choristoneura fumiferana) infestations in Douglas-fir and true fir stands increased in northeastern OREGON, but decreased in southern Oregon. Aerial spraying on 45,500 acres in southern WASHINGTON in 1962 resulted in 99 percent larval mortality. No epidemic outbreaks were recorded in Washington. The 1962 egg mass evaluation survey indicated a variable infestation trend on the Fremont National Forest, Oregon. The trend is upward, however, on the Wallowa-Whitman National Forest, also in Oregon. Population density and resultant defoliation and top killing were not severe enough in any infestation center to indicate need for artificial control in 1963 in Oregon and Washington. An egg mass survey in the Warner Mountains of Modoc County, CALIFORNIA, indicated that populations were low except in two areas. At one of these locations, white fir sustained heavy defoliation and, at other location, moderate defoliation.

Spruce budworm was epidemic for the fifteenth consecutive year in the fir forests of the northern Rocky Mountains (northern IDAHO and MONTANA). Infestations in 1962 spread to an additional 75,000 acres, thus the total area of defoliation approximates 4,575,000 acres. The severity of defoliation in 1962 was variable, increasing in some areas and decreasing in others. Tree mortality, however, was much greater in 1962 than in 1961 even though the overall degree of defoliation was less. On the basis of egg mass sampling in affected stands, heavy defoliation is expected again in 1963. Approximately 452,000 acres were aerially sprayed in Montana in 1962. Additional spraying has been recommended. A spruce budworm infestation in southern Idaho has increased in scope and severity each year since 1958. The 1962 infestation covered a total of 1.6 million acres of Douglas-fir and true fir timber. Damage levels increased, with 48 percent of the area sustaining heavy defoliation and 23 percent medium defoliation. About one-third of the total infested area has been heavily defoliated for at least two years. Reproduction losses, although spotty, are plainly evident throughout the areas that have suffered heavy defoliation. Mature trees in the areas of reported heavy defoliation are not expected to withstand another year of nearly complete defoliation. The increasing trend of the spruce budworm infestations in this area of Idaho is expected to continue unless populations are reduced by direct means.

A reversal occurred in the trend of spruce budworm infestations in the mixed conifer forests in COLORADO. Instead of the increase in acreage and severity of infestations noted in 1961 and prior years, a decline in scope and intensity of defoliation occurred in 1962. On the basis of budworm egg mass surveys in affected areas, the downward trend of infestations is expected to continue in 1963. Two spruce budworm outbreaks in southern Colorado were successfully controlled in June 1962. The largest, on the Rio Grande National Forest, involved aerial spraying on 84,285 acres. The other, encompassing but 600 acres, was in the vicinity of Ouray, Grand Mesa-Uncompahgre National Forest. Fixed-wing aircraft and helicopters were used in the spray programs. The latter were used to spray infested areas adjacent to streams so as to minimize possible adverse effects to fish and fish food organisms. The spruce budworm was successfully controlled on 445,000 acres of mixed conifer forests east of the Rio Grande in northern NEW MEXICO in 1962, reducing the total infested acreage in the Southwest to 920,000 acres. On this acreage, in the western division of the Santa Fe and Carson National Forests, New Mexico, and on the Navajo Indian Reservation, ARIZONA, budworm populations remained static at a high level. On the basis of egg mass counts, there is no indication of significant natural decline in population levels.

The long-standing outbreak of spruce budworm in the spruce-fir forests of northern MINNESOTA continued in 1962. However, there was no spread of infestations to the east and south, as in the previous several years and, on the basis of egg mass surveys during the summer months, populations are believed to be on the wane. It is estimated that approximately 600,000 gross acres are infested. Much of this area supports a relatively low percentage of susceptible host material, thus infestations do not now pose a major threat to large volumes of the forest resource. Budworm infestations were suppressed on approximately 57,000 acres during 1962, with excellent results. Control during 1963 has been recommended only in high use recreational areas on the Superior National Forest, in high value commercial stands on a portion of the Nett Lake Indian Reservation and on adjacent State and private lands.

Spruce budworm reached epidemic proportions over extensive areas of spruce-fir forests in northeastern Aroostook County, MAINE, with cumulative injury in an extensive area becoming severe. The southernmost half of the infestation (Chapman-Squapan area) was most critical, with extensive top kill and some tree mortality expected in 1963. The northern portion, although under less stress, contained heavy budworm populations with even higher population levels predicted in 1963. Cool, abundant rainy weather apparently had no adverse effect on the budworm in 1962. Light traps revealed scattering of adults in most traps, but no concentrated flights were indicated. This was probably influenced by the unfavorable weather.

LARGE ASPEN TORTRIX (Choristoneura conflictana) was present in epidemic numbers in two infestation centers of aspen leaf tier (Sciaphila duplex) in aspen stands of UTAH and western WYOMING. Infestations of large aspen tortrix were noted on the San Juan, Grand Mesa-Uncompahgre and Gunnison National Forests of COLORADO in 1962. The intensity of defoliation increased in these forests during the year but, in general, damage was light. Large aspen tortrix caused light to moderate defoliation of aspen on much of the Medford District, Chequamegon National Forest, WISCONSIN, and the Bergland District, Ottawa National Forest, MICHIGAN. Spotty defoliation also occurred in portions of Price and Rusk Counties, Wisconsin, and in the east-central portion of the State.

JACK-PINE BUDWORM (Choristoneura pinus) infestations were materially reduced by natural control factors in most jack pine stands in MINNESOTA, WISCONSIN and MICHIGAN. Populations were high across the northern half of the three States as late as May and early June. By late June, however, their numbers had been drastically reduced by parasites and predators. Only one area was reported where populations remained in outbreak numbers -- the Badoura District, southern Hubbard County, Minnesota. Two areas of heavy infestation were sprayed for control during the year. Some 12,500 acres on the Hiawatha National Forest, Michigan, and approximately 25,000 acres on the Chippewa National Forest, Minnesota, were treated, and populations were reduced by 98 to 99 percent. Plans to treat 8,000 acres by the Michigan Department of Conservation in Michigan were cancelled. Parasites and predators drastically reduced numbers in all threatened areas of Wisconsin by late June. In the northwest counties of that State, an estimated 80 to 90 percent of the late-stage larvae and pupae were destroyed.

BLACK-HEADED BUDWORM (Acleris variana) populations increased abruptly over most of the North Tongass National Forest in ALASKA. However, the status of infestations was relatively unchanged over much of the South Tongass National Forest. In the latter area, conspicuous defoliation, indicating heavy populations, was noted on Dall Island; in the vicinity of Craig, Prince of Wales Island; and on the West Arm of Chomley Sound. On the basis of egg sampling during the fall months, heavy populations are predicted for 1963 on Admiralty, Baranof and Chichagof Islands and elsewhere on the North Tongass National Forest. Barring population reductions from natural causes, artificial suppression may be needed in 1964 to prevent excessive tree mortality. Black-headed budworm is increasing on fir in Jackman region of Somerset County, MAINE.

OAK WEBWORM (Archips fervidanus) caused heavy defoliation of oak on 80 acres in Presque Isle County, MICHIGAN. UGLY-NEST CATERPILLAR (A. cerasivoranus) was very heavy in western PENNSYLVANIA where it defoliated nearly all the wild cherries. Ugly-nest caterpillar appeared on wild cherry in the Jonesboro area of Washington County, MAINE, about mid-July. Chokecherries over much of MONTANA were infested by this species.

Populations of a TUBE MOTH (Argyrotaenia sp.) continued at epidemic levels within lodgepole pine stands on the Targhee National Forest, IDAHO. The infestation was most severe in reproduction and young trees on cutover areas. The total areas of infestation increased only slightly from 1961's estimate of 100,000 acres. Fluctuations of population levels were evident but, in general, the infestation is expected to continue at an epidemic level through 1963. No effort was made to reduce populations by direct means. PINE TUBE MOTH (A. pinatubana) larvae were collected from pine seedlings in St. Landry Parish, LOUISIANA. In INDIANA, larvae of the first generation of a LEAF ROLLER MOTH (Tortrix pallorana) continue to be important in two and three-year-old pine plantations. Parasite populations appear to be building up and may help in keeping damage below economic levels in future years.

Infestations of a CLEARWING MOTH (Aegeria tibialis) were heavy on poplar and willow in Ormsby and Washoe Counties, NEVADA.

FALL WEBWORM (*Hyphantria cunea*) was abundant in western WASHINGTON during 1962, but less so in most areas than in 1961. Defoliation by fall webworm in NEW MEXICO was moderate to severe on cottonwood at Aztec Ruins, Bandelier and Chaco Canyon National Monuments. Controls were applied in these areas. Poplar trees were heavily infested in southern Dona Ana County and along the Rio Grande in Rio Arriba County. Fall webworm caused unsightly webs on elms and mulberry during mid-July in KANSAS, and the pest was abundant on native plum in various wooded areas of NORTH DAKOTA. The first small nests in ILLINOIS were observed in Macoupin County June 12. Populations remained low through July in Illinois,but increased rapidly in August and became abundant in spotted areas throughout the State. Fall webworm was unusually abundant throughout the northern tier of INDIANA counties where many trees were defoliated, and it was widespread in OHIO and MISSOURI. Generally speaking, open-grown hickory and persimmon trees in the Central States were more severely defoliated than other susceptible species. Fall webworm infestations in ARKANSAS were similar to those present in the State during 1961, beginning early and continuing through the season. Fall webworm populations were medium throughout 1962 in LOUISIANA. Late generations defoliated considerable numbers of persimmon and pecans. Parasites and predators held populations at subeconomic numbers in Louisiana. Infestations of fall webworm ranged light to heavy in GEORGIA on pecan, hickory and persimmon used as ornamental shade trees, but were lighter than those of an average year. Defoliation in SOUTH CAROLINA and NORTH CAROLINA was common. Feeding was particularly heavy in Mitchell, Yancey, Avery, Ashe and Watauga Counties, North Carolina. Fall webworm was common during late summer and fall in VIRGINIA, especially on persimmon and sourwood. About 1,045 acres of roadside trees along the Blue Ridge Parkway and in the Shenandoah National Park were treated in 1962. Additional treatments are planned for 1963. In DELAWARE, fall webworm was abundant in the eastern half of Sussex County on several tree species, especially sweetgum. Fall webworm could be found throughout RHODE ISLAND during 1962, but abundance was negligible except for short stretches of road in South Kingstown, Washington County, and Smithfield, Providence County. The pest occurred in noticeable numbers in NEW HAMPSHIRE in only widely scattered areas of the State. Fall webworm was sufficiently abundant in MAINE so that no change was noted from the 1961 abundance in the southern portion of the State. Reports from other areas of Maine indicated that infestations ranged from light to heavy. Most injury in Maine during 1962 was on untended and/or roadside growth.

GREEN-STRIPED MAPLEWORM (*Anisota rubicunda*) defoliated maples in locally severe outbreaks in northeastern KANSAS and caused extensive damage to maple trees in southeastern NEBRASKA during the 1962 season, as well as feeding on maples in MISSOURI. Larvae of this royal moth caused 25 percent defoliation on the lower half of many maple trees in central ILLINOIS, with all forms from half-inch larvae to newly emerged adults being found by July 18. Green-striped mapleworm caused local damage in VIRGINIA, as did ORANGE-STRIPED OAKWORM (*Anisota senatoria*). Eggs of orange-striped oakworm were noted in RHODE ISLAND in mid-July at Kingston, Washington County, and hatching was observed in that county by August 21. Larval feeding was widespread in the western half of Washington County and in portions of Kent County through mid-September, when it subsided abruptly and most larvae bore tachina fly eggs.

Infestations of an OAKWORM (*Anisota* sp.) in LOUISIANA resulted in partial defoliation of large areas of oaks, especially southern red and post oaks, in the northwestern portion of the State.

LARCH CASEBEARER (*Coleophora laricella*) infestations flared up once again during 1962 in northeastern WASHINGTON, causing light to moderate defoliation of western larch. Outbreaks occurred on Mica Peak and Mt. Spokane, near Spokane, Washington. Elsewhere in northeastern Washington, there appeared to be a general population increase. No control is planned. The area of infestation in the northern Rocky Mountains doubled in 1962 and was visible on 1,400 square miles. Vangard infestations extend to St. Regis and Thompson Falls, MONTANA, north to Bonners Ferry, IDAHO, and northwest to Springdale, WASHINGTON. The infestation of larch casebearer is expected to continue its spread throughout larch stands in Idaho, Montana and Washington. In WISCONSIN, larch stands in many areas were lightly defoliated by this species. Observations on population densities in Langlade County indicated the insect had increased since 1961. However, the proportional increase does not portend a serious outbreak.

ELM CASEBEARER (Coleophora limosipennella) was heavy on individual trees in the Kingston area of Washington County, RHODE ISLAND, during midsummer.

An infestation of PANDORA MOTH (Coloradia pandora) has persisted in stands of lodgepole pines along the COLORADO-WYOMING border for the past several years. Defoliation by first-year larvae in 1961 was not severe, but it was heavy enough to be visible from low-flying aircraft on some 36,000 acres. Defoliation by the second-year larvae in 1962 was not reported as severe. However, a heavy moth flight was noted in August, with moths attracted to lights in towns far distant from known infestation centers. Overwintering larvae are numerous and heavy defoliation is expected in 1963.

CARPENTERWORM (Prionoxystus robiniae) was again the most damaging insect of hardwoods, especially oaks, in LOUISIANA, with infestations occurring statewide. The pest was reported heavy from many locations in the Central States. Heaviest infestations were in oak stands on ridge tops or on westerly and southerly exposures in southern and southeastern MISSOURI. In CALIFORNIA, carpenterworm was severe on boxelder in the Oakdale area of Stanislaus County and many individual hosts were damaged in many locations over the State. The attacks of borers of several types are of importance in the growing of shelterbelt trees in MONTANA. Primary borers such as carpenterworm and LILAC BORER (Podosesia syringae syringae) are responsible for the death of many trees. Secondary borers, those that invade injured or unthrifty trees, also have taken a considerable toll. There is some indication that systemic insecticides may be valuable in combating these pests, especially the bark beetle and phloem feeding types. It has been necessary to curtail the planting of susceptible varieties in some areas of Montana. More research on biology and control of borers and other insects of shelterbelt trees is needed. In OHIO, ASH BORER (P. syringae fraxini) was more abundant than usual during the 1962 season in the northern portion of the State.

CALIFORNIA OAKWORM (Phryganidia californica) caused heavy damage and defoliation to native oak trees over much of CALIFORNIA in 1962. PINE WEBWORM (Tetralopha robustella) infestations were light to medium on pine seedlings over the entire pine-growing area of LOUISIANA.

SAGEBRUSH DEFOLIATOR (Aroga websteri) defoliated browse and range plants on thousands of acres in CALIFORNIA, mainly in the northern area. This was the most widespread epidemic of this pest ever recorded in the State. It is not known how much permanent damage will result from the defoliation. The principal plant hosts were sagebrush and bitterbrush.

Heavy infestations of PINE NEEDLE MINER (Exoteleia pinifoliella) were noted on pitch pine in NEW HAMPSHIRE, MASSACHUSETTS and RHODE ISLAND.

LODGEPOLE NEEDLE MINER ("Recurvaria" milleri) remained serious in those stands of lodgepole pine in the Toulumne River Basin of Yosemite National Park, CALIFORNIA, that were not treated in 1961. Additional control work is planned for 1963. An epidemic continued in lodgepole pine over a small area in Kings Canyon National Park where a control project is planned in 1963. In MONTANA, the largest known infestation of this needle miner ever known in the State occurred during 1962 in an area south of Butte. The infestation was very heavy on about 3,000 acres. Moth flight in Montana occurs on even years, thus adult emergence will not occur until 1964. The lodgepole needle miner continued a serious forest pest in the Intermountain States; over 200,000 acres of lodgepole pine were affected in IDAHO, WYOMING and UTAH. On the Targhee National Forest, the heaviest defoliation occurred around Island Park Reservoir, north of St. Anthony, Idaho.

In COLORADO, an unidentified NEEDLE MINER ("*Recurvaria*" sp.) has caused light defoliation in stands of ponderosa pine in various places for several years. In 1961, light defoliation was reported on several thousand acres in the southern part of the State. Damage in 1962 was less severe than in 1961 and was noticed only in one area of Colorado, west of Durango.

An epidemic outbreak of FALL CANKERWORM (*Alsophila pometaria*) and SPRING CANKERWORM (*Paleacrita vernata*) occurred on the Washatch National Forest in Mill Creek Canyon just east of Salt Lake City, UTAH. Boxelder, maple and mountain ash have been severely defoliated for two consecutive years. Heavy defoliation occurred in southeast Salt Lake City immediately adjacent to Mill Creek Canyon. Epidemic populations are expected to be present again in 1963. Spring and fall cankerworms were abundant on oaks and hickories in localized areas in southern and west central WISCONSIN, along the Red River, MINNESOTA, and in the northern part of MISSOURI. Defoliation of host trees ranged from light to moderate in these areas, but refoliation of stripped trees, particularly in Wisconsin and Minnesota, began in June and recovery of the hosts was reported good. Fall surveys in the St. Paul-Minneapolis area of Minnesota, where severe defoliation of oaks and other trees occurred during 1962, indicate the likelihood of continued severe infestations during the spring of 1963. Spring cankerworm was abundant in west and west-southwest ILLINOIS in May, with 2-6 larvae per leaf observed. Defoliation of hackberry and elm trees was quite noticeable. An occasional tree in the central and east districts also showed heavy feeding. A serious outbreak of fall cankerworm occurred in southeastern and western MASSACHUSETTS and northeast of Roanoke, VIRGINIA. A total of 2,500 acres was sprayed in Massachusetts, and plans have been made to treat 1,000 acres in Virginia in 1963. Fall cankerworm and other cankerworm species caused notable defoliation in RHODE ISLAND during 1962 in suburban areas of Cranston, Providence County, and Warwick, Kent County, during late May. Distribution was less widespread, however, than the outbreak that occurred in the same area during the 1961 season. Females of fall cankerworm were collected on tanglefoot in Cranston on October 31.

Fall cankerworm has defoliated native trees in local areas of eastern MONTANA over the past few years, and 1962 was no exception. Heavy infestations of this pest occurred in CALIFORNIA on boxelder, willow and maple trees in Sonoma and Yolo Counties during the past summer. Spotted populations of spring cankerworm caused considerable defoliation of trees in some areas of eastern NEBRASKA. Cankerworms severely defoliated trees, especially elms, over NORTH DAKOTA during the 1962 season, with both fall and spring cankerworms being involved. Females of spring cankerworm were abundant on trees and walls of buildings in the Fargo area, Cass County.

ELM SPANWORM (*Ennomos subsignarius*) continued to spread northward and eastward in 1962 in the epidemic area of the Southern States. Some defoliation of hardwoods was observed for the first time in SOUTH CAROLINA and in sections of the Great Smoky Mountains National Park, NORTH CAROLINA. The heaviest damage occurred in Graham and Macon Counties, North Carolina, and in Rabun County, GEORGIA. Moderate to heavy defoliation of oaks, hickories and other hardwoods in Macon, Clay, Cherokee, Graham and Swain Counties, North Carolina. Infestations declined in portions of Georgia and TENNESSEE. There was approximately five percent reduction in the total area infested in 1962 over 1961. In most instances, complete defoliation during the year was limited to black walnut, hickory and northern red oak. Elm spanworm infestations were suppressed on a total of 12,430 acres of high-value recreation and research areas on the Joyce Kilmer Memorial Forest and the Coweeta Hydrological Laboratory, North Carolina, and on the Chattahoochee National Forest, Georgia.

Defoliation by LINDEN LOOPER (*Erannis tiliaria*) was moderate to heavy over much of PENNSYLVANIA, northern Berkshire area of MASSACHUSETTS and parts of NEW HAMPSHIRE and VERMONT.

WESTERN HEMLOCK LOOPER (Lambdina fiscellaria lugubrosa) defoliation was severe in mixed stands of immature and mature western hemlock in the vicinity of Naselle, WASHINGTON. Some tree mortality has already occurred in localized areas and more is imminent if the infestation trend continues upward for another year. Unless the disease and parasites that were present in southwestern Washington reduce the overwintering egg population, control will be needed in 1963. In OREGON, some reinfestation occurred on areas sprayed in 1962. An egg evaluation survey was planned to assess the population trend. Older outbreaks of WESTERN OAK LOOPER (L. fiscellaria somniaria) in Oregon white oak near Dallas and Monmouth, OREGON, subsided. New infestations of the pest developed near Wren and Salt Creek, Oregon, and in other widely separated locations in the Willamette Valley. Outbreaks of this defoliator usually subside quickly without causing lasting damage to the stands. The trend is apparently downward; hence, control is unnecessary in 1963.

Aerial and ground surveys of Cape Cod, MASSACHUSETTS, revealed an extensive outbreak of a PITCH PINE LOOPER (L. athasaria pellucidaria) throughout the mid-Cape area, with smaller infestations near Provincetown in the north, south to Eastham and extending west to West Falmouth. Feeding was particularly heavy north of Provincetown, in Pilgrim Springs State Park near Truro, and northeast of Eastham and Hyannis.

A GEOMETRID MOTH, tentatively identified as Nepytia sp., has caused heavy defoliation of white spruce on a portion of the Kenai Peninsula of ALASKA for several years. Larvae were less abundant in 1962 and the infestation was judged to be on the decline. Cumulative defoliation over a 50-square-mile area on the south shore of Kachemak Bay has severely weakened the trees, exposing them to attack by the Alaska spruce beetle (Dendroctonus borealis).

SOLITARY OAK LEAF MINER (Cameraria hamadryadella) was less prevalent in NEW HAMPSHIRE during 1962 than it was in 1961. Light infestations of this leaf miner found in an oak nursery in Wayne County, OHIO, during 1959 increased extensively during the 1962 season, heavy populations building up rapidly on the lower branches of many oak trees. LEAF BLOTCH MINERS (Cameraria spp.) were general throughout MICHIGAN during the year as pests of white oak. Some trees were completely discolored by feeding. Another LEAF BLOTCH MINER (Parectopa robiniella) was evident in RHODE ISLAND but usually not common.

Light infestations of a PINE NEEDLE-SHEATH MINER (Zelleria haimbachi) developed in young ponderosa pine stands near Ashland, OREGON. Light to moderate defoliation continued in an older center of damage in lodgepole pine near Olympia, WASHINGTON. Other subeconomic damage was reported from many areas of both States. Larval and pupal parasites were abundant, indicating a possible downward trend of populations in 1963. Direct control is unnecessary. This same species caused light defoliation in most lodgepole and ponderosa pine stands from central MONTANA to IDAHO. Moderate defoliation on some 4,000 acres of lodgepole pine in Truman Gulch, Gallatin National Forest, developed from a light infestation on but 500 acres in that area in 1960.

MAPLE LEAF CUTTER (Paraclemensia acerifoliella) was prominent in Newport and Morgan areas of Orleans County, VERMONT, during 1962.

EASTERN TENT CATERPILLAR (Malacosoma americanum) infestations defoliated wild cherry in GEORGIA, as is the situation in most years. The pest was very conspicuous throughout VIRGINIA in the spring and early summer, especially on wild cherry. Populations of eastern tent caterpillar in DELAWARE during 1962 were much reduced compared with those present during the past three seasons. The first hatch in RHODE ISLAND was observed in Providence County on April 10. Infestations were heavy in areas of the county. In MAINE, the first hatch was reported April 27 in York County and April 23 in the Augusta area of Kennebec County; infestations on cherry were moderate to light, respectively. The pest was general throughout Androscoggin and Sagadahoc Counties, Maine, in light numbers. Heavy populations were reported from Cumberland County, same State. Counts of 40-plus tents on some wild cherry trees in MICHIGAN exemplified an extremely heavy population in the northwestern part of Lower Michigan. Eastern tent caterpillar was widespread in ILLINOIS, but not so abundant as during the past two or three years. The first nests were observed in Jasper County on May 7. The insect was abundant on native plum in various wooded areas of NORTH DAKOTA, and caused considerable defoliation of native plum trees from mid-April to early May throughout OKLAHOMA.

FOREST TENT CATERPILLAR (*Malacosoma disstria*) was found to be light in most aspen and maple stands throughout the northern portion of Lower MICHIGAN. However, other reports indicate the possibility of an outbreak beginning in 1963. An increased number of reports, some of which indicated greater larval numbers, were received in 1962. Populations were generally at low levels in WISCONSIN and MINNESOTA; however, larval and adult collections in the latter State indicated a slight increase over the population density occurring there in 1961. Populations over UTAH were generally low, and the pest infested cottonwood, poplar and willow in COLORADO during the 1962 season. In ALABAMA, surveys were conducted in May over 235,000 acres of bottomland hardwoods along the Alabama, Tombigbee and Mobile Rivers in the southern area. Of this area, 12,000 acres had been heavily defoliated and an additional 48,000 acres lightly defoliated, compared with 200,000 acres affected by the insect in 1961. Damage by the caterpillar was also found to be less extensive in southeast LOUISIANA than in 1961. Cooperative aerial surveys in April showed that 169,000 acres had been heavily defoliated and an additional 263,000 acres had been lightly defoliated. In 1961, approximately 1.5 million acres were defoliated by the forest tent caterpillar in Louisiana. Primary species defoliated in Alabama and Louisiana were water tupelo and sweetgum. The heaviest populations in Louisiana were in the Blind River, lower Atchafalaya River basin and Mermentae River areas. There were a few reports of forest tent caterpillar larvae on trees in VERMONT, but no visible defoliation was evident. Forest tent caterpillar was reported in heavy numbers and causing severe damage in the Caribou area of Aroostook County, MAINE, during 1962.

GREAT BASIN TENT CATERPILLAR (*Malacosoma fragile*) caused only light defoliation at scattered locations of COLORADO in 1962. It has occurred in outbreak numbers throughout aspen in southern Colorado in past years. However, aspen stands on about 100,000 acres in northern NEW MEXICO were severely defoliated during the years. Those on the Navajo Indian Reservation, ARIZONA, also were defoliated, but not as severely as in the past few years. An increase in populations of the pest and resultant defoliation were noted at the North Rim, Grand Canyon National Park, and on the adjacent North Kaibab National Forest, Arizona. Great basin tent caterpillar again defoliated cottonwood trees over large areas along the Virgin River in UTAH, and populations and damage were heavy during April on *Populus* spp. in the Virgin River Valley of Clark County, NEVADA.

TENT CATERPILLARS (*Malacosoma* spp.) were very damaging to native hosts over CALIFORNIA, with large stands defoliated in some areas. *M. constrictum* severely defoliated oaks in the vicinity of Mt. Wilson, Los Angeles County, and reports of oak defoliation were also received from Tulare and San Diego Counties.

PINE TUSSOCK MOTH (*Dasychira plagiata*) infestations on approximately 26,100 acres of jack pine, red pine and white spruce stands in three areas of MINNESOTA and WISCONSIN were aerially sprayed, with excellent results, in early spring of 1962. During the summer, two new infestations were discovered -- one in Marinette County, Wisconsin, and the other in Crow Wing County, Minnesota. Light populations also were found in stands adjacent to those sprayed for control, indicating a possible extension of infestations in those areas. A favorable ratio of parasites and predators to the host insect was reported in sprayed areas, thus natural factors may reduce the pest species and preclude the need for additional artificial control there.

Two small outbreaks of DOUGLAS-FIR TUSSOCK MOTH (Hemerocampa pseudotsugata) occurred near Spokane, WASHINGTON. One was in a small farm woodlot and the other in a relatively small second-growth Douglas-fir stands. Neither infestation was serious. However, both are being watched closely because of the threat they pose to the surrounding timber. A new infestation was found near Colbert, Washington. Douglas-fir tussock moth activity in CALIFORNIA increased in Tuolumne and Calaveras Counties. In IDAHO, defoliation by this species increased in Clarks Ferry and Bonners Ferry areas and infestations spread to Copeland and Moyie. New infestations also were discovered in Coeur d'Alene and Hayden Lake. Controls were undertaken by some individuals. A small outbreak of Douglas-fir tussock moth has occurred in white fir and Douglas-fir in a box canyon on Sandia Mountain, Cibola National Forest, NEW MEXICO, for several years. During a ground check in the area in 1962, defoliation was observed but no insects found. The infestation subsided from natural causes. WHITE-MARKED TUSSOCK MOTH (Hemerocampa leucostigma) occurred quite frequently on elm, maple and linden in the southern half of MINNESOTA, and scattered specimens could be found in RHODE ISLAND beginning in the middle of May, but economic importance in the latter State was negligible.

Egg masses of RUSTY TUSSOCK MOTH (Orgyia antiqua) were found on Douglas-fir trees in quite a large area near Olney, MONTANA. Egg masses were also found in subalpine fir near Kalispell and on Engelmann spruce in the north Flathead River Drainage of the State. The likelihood of an outbreak is not known. Outbreaks of TUSSOCK MOTHS (Orgyia spp.) occurred on four different hosts in four distinct localities in the Intermountain States. Ponderosa pine seedlings and brush species in Boise Basin, Boise National Forest, IDAHO, have been severely defoliated by tussock moth larvae since 1959. Populations in 1962 decreased sharply, primarily because of infection by a native polyhedrosis virus. About 11,000 acres of Douglas-fir on the Boise National Forest, Idaho, were infested with epidemic numbers of tussock moths, and nearly half of the area was heavily defoliated. The infestation is relatively new and expected to increase in area and severity. An infestation in the white fir stands of the Humboldt National Forest in northern NEVADA extended over 60,000 acres. Tussock moth larval populations were heavy early in 1962, but relatively few survived to the adult stage. Consequently, damage is not expected to be severe in 1963. In 1959, a virus was applied to a tussock moth infestation on bitterbrush near Reno, Nevada, and the population was reduced to a low level. Egg masses were plentiful again in 1962, and damage is expected to increase in 1963.

Cooperative suppression programs for GYPSY MOTH (Porthetria dispar) totaled more than 300,000 acres in 1962, distributed as follows: PENNSYLVANIA, 76,000; NEW JERSEY, 35,000; NEW YORK, 100,000; MASSACHUSETTS, 61,000; and MAINE, 41,000. Of special significance were the areas treated in Pennsylvania and New Jersey. Both of these are outside of the regulated zone. However, male moths were trapped within these two areas in 1961. Aerial and ground surveys in 1962 indicate that heavy defoliation by the gypsy moth can be expected in 1963 throughout most of the New England States, CONNECTICUT, and New York. Gypsy moth heavily defoliated hardwoods at Pownal and Sandgate, Bennington County, VERMONT. Defoliation was appearing the lower Connecticut River Valley; lighter infestations were noted in the Champlain Valley and Green Mountain Forest of Vermont. Infestations in NEW HAMPSHIRE were distinctly localized and less than 4,000 acres of noticeable defoliation occurred in the State. In RHODE ISLAND, the first hatch was observed in Washington County on May 2; no defoliation occurred in the State in 1962. In MAINE, the first hatch was reported in Sanford, York County, on May 12; in Augusta, Kennebec County, on May 16; and in Bar Harbor, Hancock County, on May 19. Extensive infestations became evident in areas of York County and also in Bar Harbor and near Cherryfield in Washington County. An aerial survey in late August revealed severe defoliation on 4,200 acres in southern Maine at Dayton, York County, and Denmark and Brownfield, Oxford County. Excellent control was obtained on all 1962 spray areas in York and Hancock Counties. Light infestations of BROWN-TAIL MOTH (Nygmia phaeorrhoea) were encountered in 10 NEW HAMPSHIRE towns, and a total of 7,089 webs were clipped and destroyed during the winter of 1961-62 in that State.

SATIN MOTH (Stilpnotia salicis) caused severe damage to several cottonwood trees in Orono, Penobscot County, MAINE, in early July; some trees suffered partial defoliation.

An ASPEN LEAF MINER (Phyllocnistis populiella) persisted at epidemic levels throughout southeastern IDAHO and western WYOMING in 1962. Considerable tree deformity and mortality have occurred in the past few years. Although the damage caused by this species mining poplar leaves in MONTANA was not serious this season, its presence has been noted in the eastern portion of the State for the past 2 years. OAK SKELETONIZER (Bucculatrix ainsliella) populations fell below economic levels in INDIANA in 1962, and the pest infested oaks in MISSOURI. Oak skeletonizer was more abundant than usual in many localities of MASSACHUSETTS, with larvae hanging on threads and forming cocoons on houses causing much annoyance.

PUSS CATERPILLAR (Megalopyge opercularis) appeared as usual on shade trees in many urban areas of TEXAS during the 1962 season, causing much concern among residents.

An UNDERWING MOTH (Catocala agrippina) defoliated a considerable acreage of bitter pecan in lower Red River and Ouachita River Basins of LOUISIANA in 1962. In NEVADA, a NOCTUID MOTH (Homoncocnemis fortis) caused severe damage in the Spring Mountains of Clark County, with many native ash trees being completely defoliated. Another NOCTUID (Oncocnemis punctilinea) severely damaged ash trees in the Las Vegas area of Clark County, Nevada, during April. Also in Nevada, infestations of AMERICAN DAGGER MOTH (Acronicta americana) ranged light to medium on boxelder in Washoe County, and infestations and damage to Populus spp. by Ufeus spp. varied from light to heavy in most counties during the 1962 season.

WALNUT CATERPILLAR (Datana integerrima) populations were lower than in 1961 in INDIANA; fewer walnut trees were defoliated and few complaints of damage were received. One contributing factor appeared to be the lack of adequate food supply due to an early leaf disease. Walnut caterpillar was abundant in practically all areas of ILLINOIS where black walnut occurs. Repeated defoliations by this pest are believed to be seriously weakening and causing the slow death of many black walnut trees in Illinois. Walnut caterpillar caused occasional, local damage in VIRGINIA. YELLOW-NECKED CATERPILLAR (D. ministra) first appeared in central and eastern districts of ILLINOIS July 9-13, and by August 17, damage was evident throughout the northern half of the State. Damage ranged from defoliation of a few limbs to complete defoliation of 25-30-foot oak trees. Serious defoliation by SADDLED PROMINENT (Heterocampa guttivitta) occurred on 500 acres of beech-maple on the Mohawk Trail State Forest in MASSACHUSETTS. Additional, less intensive infestations of the pest were reported in other areas throughout western Massachusetts. Based on past outbreaks, it is expected that these infestations will decline somewhat in 1963. Saddled prominent caused heavy injury to several oaks in western Kent County, DELAWARE, during early August. VARIABLE OAK LEAF CATERPILLAR (H. manteo) caused considerable defoliation of oaks in forested areas throughout eastern OKLAHOMA as well as oaks in residential areas. Infestations of variable oak leaf caterpillar have increased greatly during the past 3 years in ARKANSAS, but the pest caused only occasional, local damage in VIRGINIA during the 1962 season. POPLAR TENT MAKER (Ichthyura inclusa) lightly damaged cottonwood trees in south central TEXAS during the early spring. Also in Texas, Datana sp. (near or D. robusta) caused moderate to severe defoliation of live oak and water oak trees in Brazos County and surrounding counties during September and October.

In CALIFORNIA, several SEED and CONE MOTHS were damaging in 1962. Dioryctria abietella and Barbara colfaxiana, along with a midge (Contarinia sp.), destroyed 75 percent of the seed of a good Douglas-fir cone crop. A moderate ponderosa pine cone crop in northeastern California sustained light seed loss from Laspeyresia spp., Eucosma bobana and the midge (Rubsaamenia keeni). Hedulia injectiva caused heavy seed loss to a light Jeffrey pine cone crop in the State.

MOURNING-CLOAK BUTTERFLY (Nymphalis antiopa) did medium damage to elm, poplar and willow in Humboldt County, NEVADA, during June, and larvae reportedly fed heavily on elm and willow in isolated eastern areas of NORTH DAKOTA during the 1962 season.

MAPLE TRUMPET SKELETONIZER (Epinotia aceriella) populations were generally light in NEW HAMPSHIRE, but the pest was more abundant than normal for the second successive year in MASSACHUSETTS, where some branches of sugar maple trees had every leaf damaged. LOCUST TWIG BORER (Ecdytolopha insiticiana) caused occasional, local damage in VIRGINIA during the season.

An OLETHREUTID MOTH (Eucosma sonoma) occurred extensively in western Upper MICHIGAN and on the Stonington Peninsula, and in Crawford County in Lower Michigan. In addition, heavy infestations of Petrova sp. occurred on several square miles of jack pine stands on the Stonington Peninsula, Michigan. A LEAF TIER, identified as Sciaphila duplex, was epidemic in aspen stands in UTAH and western WYOMING. The infestations covered over 300,000 acres and occurred in commercial stands, recreation areas and game ranges. Defoliation exceeded 50 percent on about 75 percent of the areas. Many trees were killed in areas which had been defoliated for two consecutive years. In general, it is expected that leaf tier infestations will increase in size, and defoliation will equal or exceed that experienced in 1962. Tree killing may be widespread.

EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana) was first found in the Northwest near Shelton, WASHINGTON, on native lodgepole pine. About the same time, the moth was found on ornamental pines in Bellingham, Washington. Because of these finds, the European Pine Shoot Moth Committee of the Northwest Forest Pest Action Council recommended a containment zone be established from Olympia, Washington, north to the Canadian Border, west to the Pacific Ocean and east to the Cascade Mountains summit. Within this zone, no eradication would be attempted, but voluntary control would be encouraged. Outside the containment zone, eradication of infestations is being practiced. Eradication surveys in Spokane, Washington, in 1961 were apparently successful since no new infestations were found in 1962. About 176 communities in Washington were surveyed in 1962. Only one infestation was found -- at Aberdeen. This infestation was due to the movement of infested nursery stock in direct violation of quarantines. In addition to the community surveys in the State, spot checks were made in lodgepole pine stands in the Puget Sound area from Blaine to Shelton. Survey findings in the native lodgepole pine stands were negative.

The European pine shoot moth survey in OREGON uncovered a total of 18 infested pines out of 145,030 examined in 100 communities. The infested trees were found in a business-zoned area of southwest Portland not checked in 1961. The trees were destroyed. Over 18,000 native lodgepole pines were also examined along the Oregon coast near Newport. These surveys were negative. No new infestations were found in 1962 in the Salem area. The State is again free of any known infestations.

Quarantines regulating the movement of pines infested with European pine shoot moth have been adopted by the States of Washington, Oregon, Idaho, California, Montana, Utah and Nevada. The Federal Government has adopted similar quarantines regulating importation of pines.

European pine shoot moth was found widespread in pine plantations in MICHIGAN, and damage to host trees was severe at several locations. New infestations also were reported on portions of the Lower Michigan and Hiawatha National Forests. Populations along Lake Michigan in east central WISCONSIN declined and resultant damage was less severe than in prior years. Adults were observed emerging in the Fox River Valley area of Wisconsin the last week of June. Emergence began in INDIANA the first week of June in the northern area, about 10 days earlier than normal. It was found for the first time in Perry County, Indiana. In general, spot infestations of damaging proportions were reported from several localities in the Central States.

European pine shoot moth was found for the first time in southeastern Merrimack County, NEW HAMPSHIRE, on Austrian pine. It is now known to occur in only two counties in that State, Merrimack and Rockingham. Severe infestations have been reported from Westmoreland and Cumberland Counties, PENNSYLVANIA. Pennsylvania is discouraging pine planting in its southern counties because of the shoot moth. In northern WEST VIRGINIA, heavy populations of the insect were reported on red pine. Heavy infestations were present in some areas near Auburn, Androscoggin County, MAINE. Some severe damage was noted by late June.

NANTUCKET PINE TIP MOTH (*Rhyacionia frustrana*) occurred throughout the Central States in 1962. However, population levels were generally below those of 1961 in natural and planted stands of shortleaf pine. Some areas heavily infested in 1961 were relatively free of infestations in 1962. Cause of the natural decline is not known. In INDIANA, the pest continues to damage terminals of pine trees in the southern area, especially in new plantings. Virginia and jack pines are the most susceptible species. Nantucket pine tip moth was reported present throughout the pine-growing area of the Southern States. Infestations in LOUISIANA were generally heavy during the year, and the pest continued to damage pine in many areas of MISSISSIPPI. Moderate injury to Scotch, Austrian and red pine was observed in Berks and Cumberland Counties, PENNSYLVANIA. Injury was reported on pine in all counties along the Eastern Shore of MARYLAND. VIRGINIA and WEST VIRGINIA reported injury continuing at a high level. In Virginia, loblolly pine was also heavily attacked. Infestations are expected to continue at the present rate during 1963 in the Northeast.

Abundant injury by SPRUCE BUD MOTH (*Zeiraphera ratzeburgiana*) caused "ragged" appearance to the 1962 shoots on white spruce on the coast of MAINE.

ZIMMERMAN PINE MOTH (*Dioryctria zimmermani*) killed about 20 percent of sapling-size shortleaf pines in a 20-acre plantation on the Cassville District, Mark Twain National Forest, MISSOURI. Elsewhere in Missouri and in OHIO, infestations were very light. Zimmerman pine moth continues to damage pine trees in the northern half of INDIANA. It was reported from Boone County for the first time. Infestations in poorly managed stands average 85 percent. Zimmerman pine moth was found throughout MICHIGAN, but it was a problem only on Scotch pine grown for Christmas trees. Populations were down in Saginaw County and were comparable with previous years in western and southwestern counties of Michigan. This species, or near this species, caused widespread damage to pitch pine in Washington and Providence Counties, RHODE ISLAND. It was evident in late summer. *Dioryctria* sp. was reported from Dare County, NORTH CAROLINA, causing dieback of tips in stands of pond pines. *Dioryctria* sp. affected longleaf pine cones and tips in areas near Alexandria, LOUISIANA.

PINE BUTTERFLY (*Neophasia menapia*) flights were reported to be numerous in stands of western white pine and ponderosa pine in parts of IDAHO, and in a stand of lodgepole pine in MONTANA. Damage to host trees was not observed.

BAGWORM (*Thyridopteryx ephemeraeformis*) caused heavy injury to sycamores in an area of Sussex County, DELAWARE, and the usual amount of damage to locust, sycamore and other trees in the southern two-thirds of ILLINOIS. Bagworm was important on both evergreen and deciduous trees in INDIANA during the 1962 season. First observed egg hatch of bagworm in MISSOURI this season occurred during mid-May in southern areas, and scattered populations were reported damaging evergreens throughout the State.

BUCK MOTH (*Hemileuca maia*) was numerous on oaks in the Baton Rouge area of LOUISIANA. Approximately 50 percent of the larvae were killed by disease just prior to pupation. Heavy moth flights occurred in late November and December and will result in considerable numbers of larvae again early in 1963. In TEXAS, a complex of buck moth, forest tent caterpillar and *Malacosoma* sp. caused moderate to severe defoliation of oaks in central counties during the early spring of 1962.

In NEW MEXICO, egg masses of another species, H. nevadensis, were abundant in poplar trees at White Sands National Monument, except in areas treated in 1961. Effective control was obtained by treating larvae during May and June. Only an occasional egg mass was found late in the fall.

CATALPA SPHINX (Ceratomia catalpae) caused almost complete defoliation of catalpa in many areas in north central INDIANA. The pest was moderately abundant and caused noticeable leaf feeding injury on many catalpa trees in most areas of ILLINOIS. Many larvae were killed by parasites in Illinois during the 1962 season.

ELM SAWFLY (Cimbex americana) severely damaged elm shelterbelt plantings in the Bowman area of Bowman County, NORTH DAKOTA; and the species occurred sporadically in several areas of TEXAS where it caused light to heavy damage to elms.

Many species of GALL WASPS were probably the most commonly reported problem on oak shade trees in TEXAS during 1962. In INDIANA, Dryocosmus palustris was commonly found on pin oak; many complaints were received.

Populations of CONIFER SAWFLIES (Neodiprion spp.) were generally higher during 1962 in both WASHINGTON and OREGON. Some species caused damage, but others did not. Light to severe defoliation of lodgepole pine, ponderosa pine and knobcone pine occurred on the Umpqua National Forest in Oregon. Parasitism and disease may have reduced this population during the late fall. On the Umatilla National Forest, Oregon, a sawfly caused light defoliation over extensive areas of ponderosa pine. Western larch on two areas on the Wallowa-Whitman National Forest in Oregon was moderately defoliated by an unidentified species. No control is planned in 1963 against any of the sawflies in the Northwest. A light sawfly infestation on ponderosa pine near Magdalena, NEW MEXICO, died out. The infestation in the Zuni Mountains, about 80 miles northwest of Magdalena, persisted on about 1,200 acres. Damage to host trees was moderate.

BALSAM-FIR SAWFLY (Neodiprion abietis) was reported feeding on Douglas-fir at Rathdrum Prairie, IDAHO. In CALIFORNIA, white fir Christmas tree stands in Modoc and Tehama Counties were damaged by a N. abietis complex. Two species of sawflies, N. contortae and N. fulviceps complex, have fed heavily on the foliage of their separate hosts, lodgepole pine and ponderosa pine, respectively, in the Little Rockies, Lewis and Clark National Forest, MONTANA, for the past several years. Beginning in 1961, populations of both species were drastically reduced by a polyhedrosis virus and defoliation in 1962 was practically nil. HEMLOCK SAWFLY (N. tsugae) populations were extremely low throughout southeast ALASKA as predicted. Despite extensive sampling for sawfly eggs, none were found; thus, only light infestations are expected in 1963.

Pine sawflies, although not a serious problem, were more common in 1962 than in 1961 in the Southern States. RED-HEADED PINE SAWFLY (Neodiprion lecontei) was active in ARKANSAS, FLORIDA, GEORGIA, LOUISIANA, NORTH CAROLINA, SOUTH CAROLINA and TENNESSEE. The largest area affected was reported in Lawrence County, Tennessee, where several thousand acres of three to four-year-old loblolly pines were defoliated, with tree mortality ranging up to 75 percent in some plantations. There was also some defoliation of pines in localized areas of Louisiana. Scattered infestations of N. excitans were reported in eastern TEXAS, FLORIDA and GEORGIA; and N. taedae linearis was heavier and more widespread in central and eastern ARKANSAS in 1962 than at any time during the past years. N. taedae linearis defoliated a small area of loblolly pine in Winston County, MISSISSIPPI, in early March; a new State record for this species of sawfly.

Damage caused by sawflies, on the whole, was light in the Lake and Central States in 1962. Red-headed pine sawfly was reported from scattered locations in MICHIGAN and, in Emmet County, 180 acres of jack pine plantations were aerially sprayed for control. The species also caused serious defoliation of roadside pine plantings in central and eastern MINNESOTA. The pest occurred infrequently in WISCONSIN, and was occasionally destructive to pine in INDIANA. Red-headed pine sawfly was found in Franklin and Perry Counties, Indiana, in June. There was little evidence of EUROPEAN PINE SAWFLY (N. sertifer) in the Lake and Central States, except in ILLINOIS and INDIANA. In the former State, it was reported more frequently and in more places than in 1961. On the Henderson State Forest, Illinois, heavy defoliation of red and Scotch pines occurred on some 350 acres. In Indiana, European pine sawfly continued to be an important pest of pine plantations and it was found for the first time in Perry County. JACK-PINE SAWFLY (N. pratti banksianae) occurred in limited numbers in stands of jack pine infested by the jack-pine budworm on the Chippewa National Forest, MINNESOTA. N. taedae linearis defoliated Scotch and shortleaf pines in a limited area in southern MISSOURI. Near Ironton, OHIO, some 25 acres of a mixed pine plantation were stripped.

Defoliation by a VIRGINIA PINE SAWFLY (Neodiprion pratti pratti) continued in southern MARYLAND, central VIRGINIA and north-central NORTH CAROLINA. In general, defoliation was the lightest in many years, but the limits of the infestation did not change. Feeding by the sawfly is expected to be light in 1963. Heavy defoliation of shortleaf and Virginia pines in several northeastern KENTUCKY counties is believed to have been caused by this species, but positive identification has not been received. N. pratti pratti occurred in outbreak proportions on the Shawnee State Forest, OHIO, where it severely defoliated shortleaf pines. It was also reported in an ILLINOIS location.

Light and scattered defoliation by the red-headed pine sawfly was reported in RHODE ISLAND, PENNSYLVANIA, MARYLAND and VIRGINIA. Some control measures were carried out in 1962. Surveys indicate an increase in extent and intensity of attacks in 1962. Also in RHODE ISLAND, isolated, small infestations of WHITE-PINE SAWFLY (N. pinetum) and N. pratti were found in diverse parts of the State, but they were of no general economic importance. In NEVADA, infestations of Zadiprion rohweri on pinyon pine ranged light to nonexistent, except in one area of Douglas County. INTRODUCED PINE SAWFLY (Diprion similis) was found in large numbers only at two locations in MINNESOTA in the Central States. Elsewhere, infestations were at low levels.

A WEB-SPINNING SAWFLY (Neurotoma fasciata) was found occasionally in Johnston, Providence County, RHODE ISLAND; and first-generation larvae were common in ILLINOIS on wild cherry in June and early July; and second generation was common in August in this State. In MAINE, Pleroneura borealis caused 1962 fir shoots to be killed by June in the eastern area. Injury was quite common in this area of Maine, but less so in Kennebec County.

HORNTAILS (Sirex spp.) continued to degrade lumber from fire-scorched white fir, red fir and incense cedar taken from the 1960 burns in Sierra, Nevada and Placer Counties, CALIFORNIA. Various species of horntails infested elm trees in COLORADO. PIGEON TREMEX (Tremex columba) damaged park trees in Bismarck, Burleigh County, NORTH DAKOTA.

PEAR-SLUG (Caliroa cerasi) infestations of hawthorn in NEVADA resulted in heavy damage in northwestern counties. MAPLE PETIOLE BORER (Caulocampus acericaulis) was commonly causing drop of sugar maple leaves in the Portland area of Cumberland County, MAINE, in late August; and the species caused concern in INDIANA during mid-May by defoliating hard maples in several areas of the State.

BIRCH LEAF MINER (Fenusa pusilla) was recorded throughout most of the New England States. Heavy populations and heavy damage were noted on gray birch, and moderate to heavy damage was recorded on white birch in MAINE. Damage was particularly heavy to birches bordering highways. Birches on mall of Interstate Highway 95 between Augusta, Kennebec County, and Fairfield, Somerset County, suffered extensive damage. The pest caused light to heavy damage in VERMONT and was about as troublesome as usual in NEW HAMPSHIRE. Adults were active May 11 and June 27 in RHODE ISLAND. The first-generation damage in that State was conspicuous, but damage by the second was negligible. In INDIANA, birch leaf miner commonly damaged white birch foliage in ornamental plantings at Plymouth, Marshall County. Birch leaf miner was found infesting a nursery planting of birch in Eugene, Lane County, OREGON, and the species was recorded from WASHINGTON for the first time in King County where it damaged Europen white birch. ELM LEAF MINER (*F. ulmi*) was locally common on Scotch elm in various localities of MAINE.

LARCH SAWFLY (*Pristiphora erichsonii*) is generally distributed throughout stands of western larch in most of north IDAHO and MONTANA. In most years, as in 1962, host trees are only lightly defoliated. However,heavier-than-usual defoliation occurred on about 1,200 acres in the Olsen Creek Drainage, St. Joe National Forest, and in the Little North Fork of the Clearwater Drainage, and north of Headquarters, Idaho. Chronic infestations continue in the area between the Blackfoot and Clearwater Rivers in Montana. Larch sawfly was reported as abundant in stands of larch in St. Louis and Hubbard Counties, MINNESOTA; and the pest continues to cause heavy defoliation in the Upper Peninsula and northern Lower Peninsula of MICHIGAN. However, overall problems were somewhat less than in 1961 in the latter State. Elsewhere in the Lake States, infestations were noted,but resultant defoliation of host trees was less than in the previous years. Infestations of larch sawfly were noted in northwestern PENNSYLVANIA, causing up to 90 percent defoliation in some areas. Of interest is the report that one larch plantation had been defoliated nine years in a row without apparent serious consequences. In MAINE, heavy but localized feeding injury was noted near Eustis, Franklin County, and the pest was generally more abundant in Aroostook County than for several years. Also in Maine, MOUNTAIN-ASH SAWFLY (*P. geniculata*) was abundant in Aroostook County where some trees were stripped. It was also common in Kennebec County.

SARATOGA SPITTLEBUG (*Aphrophora saratogensis*) apparently decreased in susceptible pine plantations in WISCONSIN and northwestern MICHIGAN in 1962. In contrast, elsewhere in Michigan, the level of populations and resultant damage to host trees were greater than in 1961. Adverse weather is believed to have caused the population decline in the northern areas. Suppression of spittlebug on Federal and non-Federal land resulted in spraying a total of 2,734 acres. A majority of the acreage sprayed was on National Forest lands in Wisconsin and Michigan. A local infestation of PINE SPITTLEBUG (*A. parallela*) was reported affecting Scotch pine on the Munsing District of the Hiawatha National Forest, Upper MICHIGAN. Damage to host trees was restricted to twig flagging and some mortality. Several localized infestations were reported in ILLINOIS. Spittle masses of this insect were found in PENNSYLVANIA, VIRGINIA and WEST VIRGINIA. Although infestations were heavier than usual, no serious damage is expected in the Northeast. In LOUISIANA, pine spittlebug heavily infested young pines in Webster Parish, with light infestations noted in several areas in northern part of the State.

Infestations of a PLANT BUG (*Neoborus illitus*) were locally heavy on ash trees in several locations in northern CALIFORNIA and in the upper San Joaquin Valley. A CICADA (*Okanagana* sp.) severely damaged many thousands of pinyon pines in the Pine Nut Range, Ormsby County, NEVADA, by egg deposition in twigs. PERIODICAL CICADAS (17-year race) emerged in outbreak proportions in southern NEW JERSEY, eastern PENNSYLVANIA and central VIRGINIA. Although the killing of branch tips by periodical cicadas was spectacular and widespread in the Northeast, no significant tree damage is expected.

Various species of unspecified APHIDS were a problem on shade trees during 1962. Heavy infestations were reported on a variety of host trees in RHODE ISLAND, KANSAS, TEXAS, NORTH DAKOTA, NEVADA, OREGON and ALASKA.

The acreage of epidemic outbreaks of BALSAM WOOLLY APHID (*Chermes piceae*) decreased in OREGON, but increased slightly in WASHINGTON. The majority of the outbreaks in subalpine fir were centered on the Willamette National Forest in Oregon. Heaviest and most extensive losses in Pacific silver fir stands occurred on the Gifford Pinchot National Forest in Washington and on the Siuslaw National Forest in Oregon.

In Pacific silver fir stands, the trend is variable. In subalpine fir stands, the trend is slightly upward. In the Black Mountains of NORTH CAROLINA, Fraser fir mortality continued at an ever-increasing rate due to infestations of balsam woolly aphid. An extension of the infestation was discovered in 1962 on Roan Mountain along the North Carolina-TENNESSEE State line. Only five trees were found infested on Roan Mountain, but examination of radial growth indicated the aphid had been present for four years. It is unlikely that these are the only infested trees. The aphid was also detected in a new location on planted fir in Burke County, North Carolina. Subzero weather during February throughout MAINE, NEW HAMPSHIRE and VERMONT radically reduced populations of this serious pest of balsam fir. However, a sufficient population of the aphid survived to permit the continuation of the infestation in most of these areas. A spot infestation of the balsam woolly aphid on Fraser fir was observed in the Shenandoah National Park, VIRGINIA, in 1962. Practically all of the firs observed were infested with tip or gout form. Only an occasional attack on the trunk was observed. Some tree mortality due to this aphid was evident. No suppression activity is planned for this Virginia infestation in 1963.

In CALIFORNIA, an APHID (*Cinara curvipes*) was quite heavy on fir in a few locations on forests, and another APHID (*C. piceicola*) was common on spruce in many locations throughout the State on forests and nursery stocks.

PAINTED MAPLE APHID (*Drepanaphis acerifoliae*) caused concern on red maple during 1962 in MARYLAND. The species was extremely heavy on maple trees in Butte and Yuba Counties, CALIFORNIA, and varied populations occurred on maples at other northern locations in the State. Some defoliation occurred and control was required in many instances in California.

WOOLLY ELM APHID (*Eriosoma americanum*) was abundant on elms throughout VIRGINIA and locally abundant on elms in western PENNSYLVANIA. In MONTANA, leaf deformation by this species is very common on elms in park and yard plantings over much of the eastern half of the State.

A GIANT WILLOW APHID (*Lachnus salignus*) infested cottonwood, poplar and willow in COLORADO, and moderate numbers were present in central and eastern NEBRASKA. In CALIFORNIA, this aphid was particularly noticeable on cultivated and native willows in many locations. *L. salignus* was also of concern during 1962 on weeping willows in MARYLAND. Also in that State, TULIPTREE APHID (*Macrosiphum liriodendri*) was of concern on yellow-poplar. In WYOMING, infestations of another APHID (*M. eoessigi*) occurred in most areas, but late in the year, and little damage resulted. Also in Wyoming, galls of POPLAR VAGABOND APHID (*Mordwilkoja vagabunda*) were very abundant on poplar trees, about the same as those in 1961.

ELM LEAF APHID (*Myzocallis ulmifolii*) infested elms throughout the growing season in CALIFORNIA. Heavy honeydew drip and falling leaves made considerable mess on walks and streets. Very few elms escaped infestation, and treatment did not hold down populations for more than three weeks. This aphid was also of concern in MARYLAND during 1962 on American elm. In NEVADA, *M. robiniae* caused partial defoliation of locust in Mineral County. An OAK APHID (*M. californicus*) occurred on oak trees in Oak Glen, San Bernardino County, CALIFORNIA; adults were heavy.

BLACK CHERRY APHID (*Myzus cerasi*) occurrence on trees in WYOMING was common during 1962 and populations were much larger than in 1961. In CALIFORNIA, this species was particularly heavy on hawthorn trees in Eureka, Humboldt County.

POPLAR PETIOLE GALL APHID (*Pemphigus populitransversus*) was locally heavy on poplar trees in CALIFORNIA and caused considerable inquiry from homeowners. NORWAY-MAPLE APHID (*Periphyllus lyropictus*) heavily infested Norway maple in many PENNSYLVANIA towns, and subsequent defoliation was heavy during the late summer. This aphid was abundant enough in MASSACHUSETTS to cause leaf drop and excessive honeydew production in many areas of the State. BOXELDER APHID (*P. negundinis*) damaged foliage of boxelder trees in Santa Fe and Taos Counties, NEW MEXICO, during September.

The cumulative injury caused by PINE LEAF APHID (Pineus pinifoliae) remains severe on small white pine saplings and reproduction throughout MAINE, NEW HAMPSHIRE and VERMONT. Larger trees are also showing the effects of this cumulative damage. Extensive browning of white pine appeared in western Maine, and severity in eastern Maine remained about the same as in 1961. Generally, infestations appear to have declined slightly from 1961 in the Northeast.

WOOLLY ALDER APHID (Prociphilus tessellatus) was abundant on maple throughout VIRGINIA and common on several maples in Sussex County, DELAWARE, during mid-June. In NORTH CAROLINA, this species prompted a number of reports from mid-May to June 19 as a pest of maples. Specimens received during the first week of June were alates. BEECH BLIGHT APHID (P. imbricator) caused concern on beech during 1962 in MARYLAND. A LEAF CURL ASH APHID (P. fraxinifolii) was locally abundant on ash in PENNSYLVANIA and severe in a few local areas of CALIFORNIA on ash, but generally the pest was lower than in 1961 in the latter State. Also in California, Pterocoma smithiae was particularly heavy on willow in the Owens Valley (Inyo County) and Thecabius populimonilis occurred locally on poplar trees in Yuba County.

SYCAMORE LACE BUG (Corythucha ciliata) was abundant on sycamores in New Castle County, DELAWARE, and extensive feeding was found on sycamore in Phelps and Richardson Counties, NEBRASKA. HACKBERRY LACE BUG (C. celtidis) populations were low in INDIANA. In NORTH DAKOTA, OAK LACE BUG (C. arcuata) was numerous on oaks and ELM LACE BUG (C. ulmi) was numerous and damaged elms. BASSWOOD LACE BUG (Gargaphia tiliae) caused damage to basswood in Richardson County, NEBRASKA, and an ASH LACE BUG (Leptoypha minor) was much lighter on ash trees in CALIFORNIA than during 1961.

HACKBERRY-NIPPLE-GALL MAKER (Pachypsylla celtidismamma) was common on hackberry in Cass County, NORTH DAKOTA; and this species and P. celtidisvesicula caused some defoliation of hackberry in KANSAS in early August. Another PSYLLID (Euphyllura arbuti) was heavy and damaged a large percent of the native madrone trees in the coastal area of CALIFORNIA north of San Francisco Bay.

A PIT SCALE (Asterolecanium minus), first observed in OHIO in 1960, appears to have spread widely throughout the northern half of that State. In MISSOURI, first crawlers of an ARMORED SCALE (Aspidiotus liquidambaris) were reported from the east-central areas during early May. Light to moderate infestations on leaves of sweetgum were reported from the same area during June. During early July, crawlers of what appeared to be the second generation of this species were observed on sweetgum in the same area. In FLORIDA, another ARMORED SCALE (Chionaspis longiloba) was collected at Welaka, Putnam County, and at Orange Lake, Marion County, on willow in 1961. This species has not previously been reported from Florida. BLACK PINE LEAF SCALE (Aspidiotus californicus) became locally heavy on some forest pines during 1962 in CALIFORNIA.

BEECH SCALE (Cryptococcus fagi), in association with the fungus Nectria coccinea var. faginata, caused some mortality in the Green Mountain Forest of VERMONT. A SOFT SCALE (Lecanium caryae) continued to be a severe pest of shade trees in the Birmingham area of Oakland County, MICHIGAN, and Lecanium sp. damaged water oak in northeast TEXAS. OAK KERMES SCALES (Kermes spp.) were less troublesome on bur and white oaks in INDIANA than in previous years. EUROPEAN ELM SCALE (Gossyparia spuria) was a considerable problem on street trees and dooryard elms in many locations of CALIFORNIA, and occasional infestations were found on American elm in Santa Fe County, NEW MEXICO. European elm scale was more numerous during 1962 in WYOMING than last year, with very heavy damage occurring on many trees. When properly used, controls were generally effective in that State. The species caused the usual amount of dieback of American elm in western KANSAS and infested elms in COLORADO. European elm scale appeared to injure trees severely in MINNESOTA when present. EUROPEAN FRUIT LECANIUM (Lecanium corni) was present on many trees in spotted locations in southern MICHIGAN, and is a problem on shade trees in some larger MINNESOTA municipalities. This species was heavy on Brazil peppertrees in San Diego County, CALIFORNIA, and light on ash trees in other locations in that State. OYSTERSHELL SCALE (Lepidosaphes ulmi) caused very heavy damage to many trees in WYOMING.

A PINYON NEEDLE SCALE (Matsucoccus acalyptus) caused severe defoliation throughout most of the pinyon pine type of southwestern UTAH and NEVADA. The infestation is expected to persist and to further defoliate affected trees. A RED-PINE SCALE (M. resinosae) continued its slow but relentless destruction of red pine throughout the known infested zone in the Northeast. Although at present restricted to within a fifty-mile radius of New York City, it has the potential to spread much further. No effective controls are known, but New Jersey has exerted diligent efforts to suppress known infestations within the State by cutting infested stands.

PINE NEEDLE SCALE (Phenacaspis pinifoliae) caused considerable damage to ponderosa pine in and near The Dalles and in the lower Hood River Valley, OREGON.Subepidemic losses were fairly common in other ponderosa pine stands in both Oregon and WASHINGTON. Pine needle scale is primarily a pest of ornamental trees in north IDAHO and MONTANA, but at times it is damaging to trees in forest stands, particularly along the edges of dusty roads. In 1962, approximately 1,200 acres of lodgepole pine were heavily infested in Glacier National Park, Montana. Many sapling-size trees were killed and foliage on others turned yellow. Pine needle scale was more numerous in WYOMING than in 1961. Damage was very heavy on many trees. In RHODE ISLAND, this scale insect has increased in frequency. The species infested ornamental pines in MISSOURI.

COTTONY MAPLE SCALE (Pulvinaria innumerabilis) populations were much lower in northern INDIANA than for the past several years. Hatching occurred early in June because of the unseasonably warm weather. In MICHIGAN, local outbreaks of this species on hard and soft maples occurred for the second year in several locations near Lansing, Ingham County. Also in Michigan, PINE TORTOISE SCALE (Toumeyella numismaticum) was found killing mature jack pine in Delta County. In CALIFORNIA, eradicative treatments have been applied to tuliptrees infested with TULIPTREE SCALE (T. liriodendri) in San Jose, Santa Clara County, the only known infestation in the State. Also in that State, Stomacoccus platani was generally abundant on sycamore trees in many locations, and medium populations of Eriococcus quercus developed on street oaks in Santa Maria, Santa Barbara County. In VERMONT, a MEALYBUG (Phenacoccus acericola) is more prevalent than in some other years.

The MEALYBUG (Puto cupressi) has been epidemic since 1958 on the Payette National Forest, IDAHO. The infestation persisted for two or three years and then nearly disappeared, only to reappear in another location a short distance away. The present infestation covers about 500 acres in Big Dave Creek north of McCall, Idaho. Hosts are alpine fir, white bark pine and Engelmann spruce. No tree mortality has occurred and no practical control measures are known. Populations of a spruce mealybug, Puto sp., continued at epidemic levels within Engelmann spruce stands in southern UTAH. The infestations occur in three separate areas totaling approximately 60,000 acres. Noticeable limb killing occurred in one area in 1962. Mortality of Engelmann spruce reproduction is common within the older infestations.

A GALL MIDGE (Contarinia sp.) caused light to severe defoliation of Douglas-fir on parts of the Wallowa-Whitman National Forest in OREGON. In the affected areas, Christmas tree values have been seriously reduced but no tree mortality has occurred yet. No control measures have been developed. Two species of GALL MIDGES, C. pseudotsugae and C. constricta, often are found infesting the same host tree in north IDAHO. The damage they have caused to Douglas-fir has been increasing steadily since 1957. In 1962, heavy populations occurred in all Douglas-fir stands along the South, Middle and North Forks of the Clearwater River in Idaho. Heavy infestations also were noted in several areas of western

MONTANA. Damage in the latter area has seriously curtailed harvesting the young growth for Christmas trees. In NEW HAMPSHIRE, BALSAM GALL MIDGE (Cecidomyia balsamicola) was not noticeably abundant anywhere in the State in 1962.

Defoliation of oaks in Marinette County, WISCONSIN, by WALKINGSTICK (Diapheromera femorata) was less in degree and extent than was the case in 1961. However, infestations were heavier in Waushara County and in a few scattered areas in the southern part of Wisconsin. Eggs commenced hatching during the second week of June in Marinette County, and by mid-July, nymphs had begun changing color and some mating was taking place by the second week of August. Egg laying was underway by the third week of August. Walkingstick caused heavy defoliation of 1,200 acres in Ogemaw County and 500 acres in Dickinson County, MICHIGAN. The problem was comparable with that observed in 1960 and was less than a peak infestation in 1956. This species was again represented by a high population density in Starke County, INDIANA, where it was feeding on black oak. An estimated 25,000 acres were defoliated by the walkingstick in the Ouachita Mountains in ARKANSAS and OKLAHOMA. Although black oaks were the heaviest hit, white oak and other species were attacked. This insect has been active in the area for several years.

MITES in general occurred earlier than usual in CALIFORNIA, but remained static for long periods. Due to weather and natural enemies, populations were not as numerous as in previous seasons. Many host plants reflected previous season's damage by breaking dormancy out of season and by blooming. Mixed populations of mites occurred rather generally in the State. A miticide was added to treatment materials in many areas as a precaution. Some defoliation of street and yard trees and shrubs occurred, and effects of infestations were evident until fall, with continued leaf drop occurring. SPIDER MITES were one of the most numerous groups of pests causing the most damage to shade trees in NEVADA during the 1962 season. Eotetranychus multidigituli was found attacking honeylocust in PENNSYLVANIA, and the species was common on thornless honeylocust at La Porte, INDIANA, early in July. Oligonychus bicolor was abundant on several species of oaks in MASSACHUSETTS, and O. platani was a pest of sycamore trees in CALIFORNIA and on live oaks in a few locations of that State.

An unspecified GALL MITE has infested and killed many hybrid poplar trees in MONTANA during the past few years. Infestations usually start at the bottom of tree and each succeeding year more and more of the tree is infested. Leaf buds are attacked and, in severe infestations, only galls are present where the leaves normally develop. After a time, the tree starves to death due to lack of leaf surface. A good control for this mite in Montana is not known. Eriophyes spp. and other mites affected a number of birch trees in ALASKA. Unspecified ERIOPHYID MITES infested elms in COLORADO, and they continue to be problem on the terminal growth of various shade trees in MINNESOTA. The eriophyid, Eriophyes emarginatae, caused finger galls on leaves of Prunus emarginata in Castle Crag State Park in CALIFORNIA; and another eriophyid, Phyllocoptes didelphis, was heavy on native trembling aspen along the Tioga Road in Tuolumne County, same State. Also in California, Trisetacus quadrisetus was heavy on tuliptrees in San Jose, Santa Clara County. The main infestation has received eradicative treatment and additional work will be done, as this is the only known infestation in the State. MAPLE BLADDER-GALL MITE (Vasates quadripedes) again was common on silver maple throughout INDIANA, and reports were very frequent in VIRGINIA. The mite was responsible for an unusual number of complaints in RHODE ISLAND, and infested maple in Cass County, NORTH DAKOTA.

UNITED STATES DEPARTMENT OF AGRICULTURE
WASHINGTON 25, D. C.

Official Business

POSTAGE AND FEES PAID
U. S. DEPARTMENT OF AGRICULTURE